How many hillforts are there in western Scotland?

Comparing aspects of the size, morphology and landscape position of later prehistoric enclosed sites in Kintyre, Skye and the Stewartry of Kirkcudbright

Simon Wood

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DECLARATION OF OWN WORK

I declare that this thesis has been composed solely my myself, and that it has not been submitted for any other degree or qualification. Except where stated otherwise by reference or acknowledgement, the work presented is entirely my own.

Simon Groves Wood

Date:

21 October 2017

ABSTRACT

Hillforts in Scotland are smaller than their counterparts in southern Britain and extremely difficult to define as a site category. This is even more true in the western and northern parts of the country traditionally described as Atlantic Scotland, where the plethora of small enclosed sites forms a continuum in terms of size and morphology that cuts across the boundaries of current classifications. Using the recent definition of a hillfort by J.D Hill as a site type that is not a farmstead, this thesis attempts to analyse enclosed sites in terms of their area enclosed, morphology/architecture and particularly their landscape position to try to identify groups of sites or individual monuments that are these 'not-farmsteads'.

Three case study areas have been chosen for GIS-based analysis. Skye and Kintyre are in Atlantic Scotland. The former is a region where brochs have always been central to interpretations of the Iron Age, but it has a considerable number of larger hilltop enclosures classed as forts, and small, less regular drystone enclosures classed as duns. The forts of Kintyre in Argyll have been more studied, but their social role, as well as their relationship with and distinctiveness from the duns of Kintyre are still unknown. The final case study area is the Stewartry of Kirkcudbright, part of Galloway, in Prof. Piggott's Solway-Clyde province. Generally included with southern Scotland and the Borders in syntheses of Scottish prehistory, it has many aspects to its later prehistoric archaeology that may be considered 'Atlantic' in nature, such as small prominent drystone enclosures, promontory forts and sites with complex, traditionally Atlantic architecture. However, there are also hilltop enclosures classed as forts that are much larger than in the other two case study areas.

GIS based analyses have been used, and combined with statistical testing to try to identify patterns in the landscape positioning of certain classes or sizes of enclosed site. Sites have been analysed in terms of their distance from the sea, altitude, topographic prominence, visibility in the landscape, and proximity to/visibility of agricultural land. These results have been interpreted to try to refine present site categorisations, and to attempt to identify those sites that are different from merely farmsteads.

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CONTENTS

DEFINITIONS AND DATA SOURCES

RCAHMS: The Royal Commission on the Ancient and Historical Monuments of Scotland. Now Historic Environment Scotland. RCAHMS has been used as a reference for the organisation throughout this thesis as the merger and name change occurred mid research.

OS: Ordnance Survey.

The Iron Age when referred to in this thesis covers the years between roughly 700BC and 400AD as defined by Armit (1997b, 15) and discussed in the recent SCARF report (SCARF 2012, 10). The period following this, up to approximately 800AD, has been described as either the *Early Historic* period or the *Early Medieval* period. The terms *1st millennium BC* and *1st millennium AD* have also been used at various points to describe these time periods. The 'long Iron Age', a concept used by many researchers (e.g. Harding 2004, 3) to cover the period from 700BC to 900AD has not been used. This is an arbitrary decision - the choice of one over the other makes little difference to the results or interpretations of the analyses being carried out in this research.

Data for mapping and GIS analyses has been obtained from a number of sources:

- Edina Digimap: http://digimap.edina.ac.uk
- Scotland's Soils/the Scottish Government: http://www.soils-scotland.gov.uk/
- British Geological Survey: http://www.bgs.ac.uk/
- Google Earth: http://earth.google.co.uk
- The National Library of Scotland: http://maps.nls.uk/

Copious use has also been made of Historic Environment Scotland's Canmore website: https://canmore.org.uk/

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1. Introduction

1.1 How many hillforts are there in western Scotland?

The main aim of this research is to determine the number and character of hillforts along the western coast of Scotland. This is not as straightforward as just analysing one discrete group of monuments, as archaeologists of British Iron Age have come to realise that defining what is and isn't a hillfort is a very difficult question indeed (Halliday & Ralston 2009). The nature of Scotland's hillfort and enclosed settlement record is extremely complex, both in terms of the archaeology itself and how it has been categorised, with the term 'fort' used for enclosures surrounding areas of as small as 0.03 hectares, and as large as 17 hectares, the criteria used in this classification varying greatly at different times and across different parts of Scotland. Any attempt to characterise hillforts in western Scotland necessitates examination of what makes a fort a fort in that region, and requires investigation into other categories of enclosed settlement site also in order to determine what the qualities were that set forts apart from other enclosed sites. Can the character of the sites that share those 'fortlike' qualities be discovered, and what function might they have had in later prehistoric societies? Identification of these sites is integral to our understanding of the settlement archaeology of the 1st millennia BC and AD in this region, as they may constitute the communal places that allowed political systems based on dispersed communities to function and survive.

While the focus of the thesis remains primarily on the largest enclosures, re-examination of present classificatory systems has been deemed necessary, as they do not accurately reflect patterns in the archaeological record (Chapter 3.4), and this has necessitated analysis of smaller or more ephemeral later prehistoric enclosed settlement sites in western Scotland, those conventionally defined as duns, settlements, and brochs. Present-day classifications have used aspects of site architecture, morphology or size, or the subjective assessments of investigators in categorising sites (e.g. RCAHMS 1909-1988). This thesis attempts to utilise the same attributes but add to them an exploration of the positioning of sites in the landscape, to see whether there are patterns in the relationships between enclosed sites with particular characteristics and their locations.

It has been necessary to conduct this study at a macro level, looking for large-scale patterns among groups of sites, due to the dearth of in-depth research into larger later prehistoric enclosures in western Scotland – few individual sites have been investigated to the degree that we have a reliable idea of chronology, function or hierarchy. Iron Age research in many parts of Scotland is still at the data-gathering phase (SCARF 2012), with the three regions selected as case studies in this thesis (Kintyre, Skye and Kirkcudbrightshire; Figure 1.1) all described as 'black holes' in terms of later prehistoric knowledge by Haselgrove et al in their review of the British Iron Age in 2001, and lacking even a basic framework. Most information about larger enclosed sites in western Scotland comes from the series of Royal Commission inventories carried out between 1912 and 1988, and excavated data is sparse, with archaeological attention instead concentrated on smaller, distinctively Atlantic types, like the complex Atlantic Roundhouses of the Western Isles.

Figure 1.1: *Overall study area and case studies.*

1.2 Regionalism and case studies

Western Scotland is not a cohesive geographical region that appears in any syntheses of Scottish prehistory. The area chosen for study in this thesis (Figure 1.1) does not represent any recognised archaeological division, instead it cuts across areas that have become established archaeological units. This is a deliberate decision and allows comparison, within my overall study area, of regions that are conventionally considered different with respect to the nature of their later prehistoric settlement records. The traditional structure of Scotland's Iron Age, still widely accepted today, is based on research carried out in the first half of the 20th century, and on a later prehistory interpreted through a culture historical framework (SCARF 2012, 16).

Stuart Piggott's 'A scheme for the Scottish Iron Age' (Piggott 1966, 1-16; Figure 1.2) was a northward extension of Christopher Hawkes' division of England and Wales into provinces (Hawkes 1959). While Hawkes' provinces are rarely used today, Scotland is still divided into four along the same lines as Piggott's provinces in much recent discourse (for example in Haselgrove et al 2001, 25). Ralston (1996, 133) has notably questioned the treatment of Piggott's provinces as 'monolithic blocks' and criticised the unquestioning regionalism of study 'bedevilling' Scottish prehistory. However the Atlantic province in particular has remained a distinct unit, comprising the Northern Isles, Western Isles, Caithness, Sutherland, Wester Ross, Skye, Lochaber and Argyll and Bute, with a specific tradition of monumental drystone roundhouses and small enclosures (brochs and duns), and complex architecture including intramural galleries, staircases, hollow walls and door checks (e.g. Armit 1990; 1991; Gilmour 2000a; Henderson 2000; 2007; Harding 2004a). The exceptional and impressive nature of the archaeology, and its excellent preservation, has meant that the region, particularly the Northern and Western Isles, has attracted considerably more attention than the remainder of Scotland – Ralston observed that, by the mid 1990s, seven times as many articles had been published concerning the Atlantic province than Solway-Clyde, in the South West (Ralston 1996, 133).

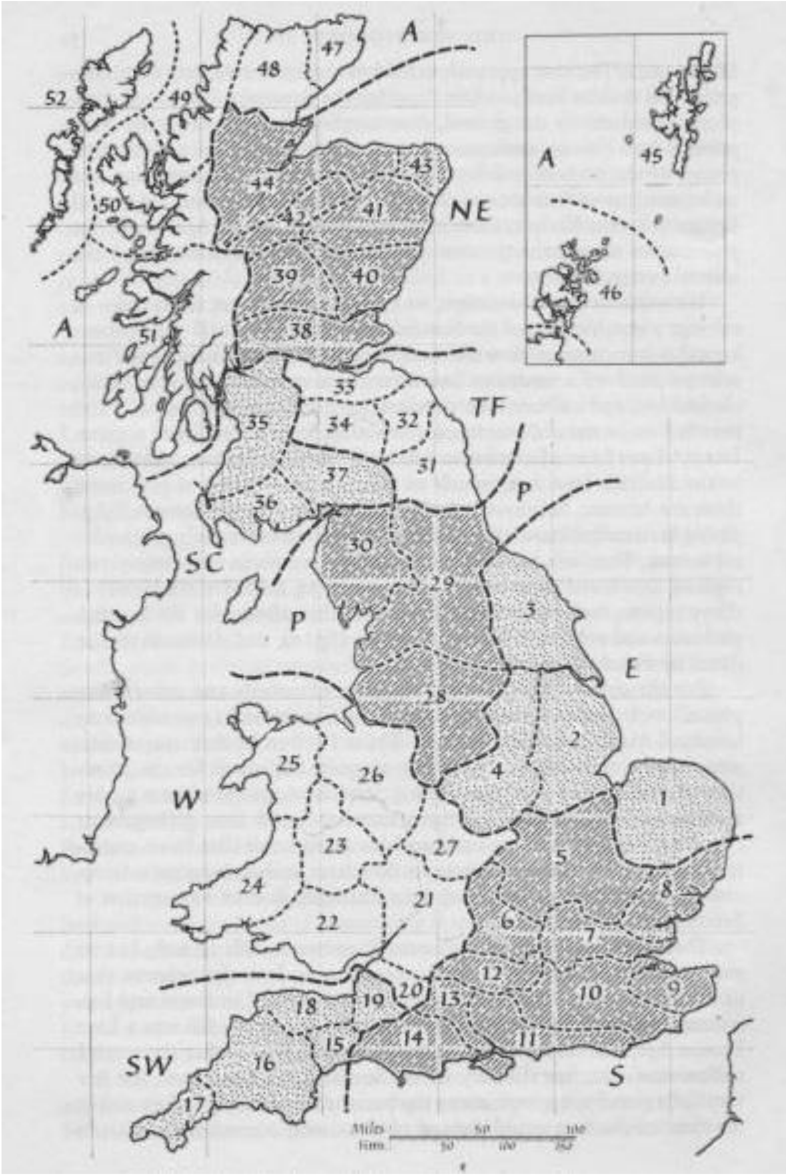

Figure 1.2: *Piggott's Provinces. (After S. Piggott 1966, 4, fig. 1). The Atlantic Province is labelled A, Solway-Clyde is SC.*

Few authors have questioned the status of Atlantic Scotland as distinct from the rest of Scotland, although Hingley has done so, arguing that patterns in the settlement archaeology of the region are more complex than originally imagined, and that it is much less different as an entity from the rest of Scotland as had been previously believed (Hingley 1992). Harding (2004a) used a threefold division of Atlantic, Central and Eastern, and Borders/Southern in his synthesis of northern British prehistory, while arguing for a more complex six-region split, which effectively divided Atlantic Scotland in three. The SCARF panel report on the state and direction of Iron Age research in Scotland directly challenged the unthinking use of Piggott's provinces 'rarely paying any more than lip service to the thinking that lay behind them' (SCARF 2012, 16-18), which echoes a similar observation made by Hunter (2007, 286-7). Hawkesian thinking was embedded in a tradition of distinct, discernible cultures and invasion as the major stimulus for change, and has been rightly discredited in England and Wales, yet in Scotland we still use the provincial structures that resulted from it. Recently, some regional studies have taken place that cut across the borders of Atlantic Scotland, challenging its extent, if not its existence as an archaeological unit. The works of Cavers (2008; 2010) and Henderson (2007) have questioned whether the settlement record of Galloway in South West Scotland is actually closer to that of the Atlantic region and stimulated debate on what the concept of 'Atlantic' archaeology really means.

The study area chosen for this thesis (Figure 1.1) reflects that used by Cavers (2010) in his analysis of crannogs and other later prehistoric settlement in Atlantic Scotland and the South West. Within Western Scotland I have chosen three case study areas to focus on; Skye, Kintyre and Kirkcudbrightshire. These are all within wider regions identified as 'black holes' by Haselgrove et al (2001, 24-5) in their article concerning Iron Age research in Britain, regions where 'archaeological understanding of the Iron Age has barely begun'. Kintyre is in Argyll, conventionally in Atlantic Scotland, and is a region known for small enclosures known as duns, yet it also has many larger sites classed as forts (Harding 1997). Skye is also within Atlantic Scotland, but research has historically focused on the considerable numbers of brochs, or complex Atlantic Roundhouses, present on the island (e.g. Armit 1996). Due to many archaeologists' historical concentration on brochs, little is known about the numerous larger enclosures on Skye, classified as forts (despite MacSween's 1985 synthesis which incuded such information as was available). Finally, Kirkcudbrightshire is part of Galloway, in South West Scotland, within Piggott's Solway-Clyde province. It has greater numbers of large enclosures than the other case studies, and hillforts take a more central place in discussions of Iron Age settlement patterns in the region (e.g. Banks 2002; Cowley 2000). As a result it has often been grouped with the Borders (Harding 2004a), or Ayrshire and Renfrewshire (Piggott 1966), in syntheses of Scottish prehistory. Yet arguments have been made by Henderson (2007) and Cavers (2008; 2010) that Galloway shows evidence for significant Atlantic influence in its archaeology, and it will be interesting to explore similarities and differences between its enclosed sites and the other two case study areas. In all three areas, especially Skye and Kintyre, enclosed sites classified by the Royal Commission on the Ancient and Historical Monuments of Scotland (RCAHMS) as forts are much smaller than many southern British hillforts (SCARF 2012, 80). These regions are therefore useful case studies in that they help to address the question of ‘when is a site too small to be a hillfort’, and through that explore fundamentally what we mean by a hillfort. What are the characteristics that distinguish these sites from other classes?

1.3 Recognising hillforts

J.D. Hill’s definition of a hillfort as a ‘not-farmstead’ has been adopted in this thesis (J.D. Hill 1995; 1996). The reasons for this and a thorough examination of the theories surrounding the functions of hillforts and their possible role in later prehistoric societies are explored in Chapter 2. Hill’s analysis of hillforts was one of a profusion of papers that appeared in the 1980s and 1990s that changed how archaeologists viewed and evaluated the Iron Age (e.g. Barrett 1981; Hingley 1984; Bowden & McOmish 1987; Hill & Cumberpatch 1995; Champion & Collis 1996; Gwilt & Haselgrove 1997).

One of Hill’s major premises was that later prehistoric societies based on isolated enclosed individual households required communal sites in order to function (J. D. Hill 1995, 53-4), and if that is the case then Atlantic Scotland, with its plethora of small fortified homesteads, is a perfect example of a place that should have these ‘not-farmsteads’. Recognising them, however, may be difficult. Hillforts in Scotland are generally much smaller than in southern England, and Scotland does not even use the term ‘hillfort’, preferring to use ‘fort’ which is classified by the RCAHMS as ‘an enclosure, often located on a hilltop, bounded by one or more banks, ditches, ramparts or walls’ (RCAHMS online thesaurus, cited in Halliday & Ralston 2009, 457). This comparatively vague definition essentially means that a fort does not necessarily have to be on a hill, makes no mention of enclosed area or scale of defences and can have any number of defensive circuits of any construction. The problems of defining hillforts in Scotland have been explored in detail by Halliday and Ralston (2009), who have traced the history of the ‘fort’ classification, arguing that it has not been applied consistently in Scottish archaeology and that it is ‘no more than a subjective label’ indicating defensibility (Halliday & Ralston 2009, 467-8). Notably the SCARF (Scottish Archaeological Research Framework) Iron Age panel has acknowledged that attempts to classify enclosed sites on a national level have been wholly unsuccessful, and has recommended a more regionally-based approach (SCARF 2012, 77).

1.4 The objectives of this thesis

Finding 'not-farmsteads' in western Scotland is not straightforward. Few enclosed sites have been subject to excavation and many of those that have do not have good radiocarbon dates or rely on unreliable object typologies to determine chronology. The relative dating of certain site types, for example duns and forts in Argyll, is subject to debate and is not helped by the uncertainty surrounding the viability of the site classifications themselves.

The Atlas of Hillforts in Britain and Ireland project, a joint research program carried out by the Universities of Oxford and Edinburgh has defined a hillfort under three major headings (Lock & Ralston pers. comm.):

- The size and scale of the defences.
- The area enclosed by the ramparts.
- Topographic prominence.

These criteria are a useful starting point in determining whether or not a site might have a communal, hierarchical and/or defensive role beyond that of a farmstead, and analyses within this thesis will use similar criteria as a basis for identifying these sites.

A decision has been made, however, not to attempt to recreate scale of defences for the sites being analysed. Such an undertaking is not possible to carry out accurately for this dataset without widespread excavation due to a lack of data for many sites. This is exacerbated by a majority of enclosed sites in western Scotland being originally of drystone or timber-framed construction, and often surviving only as badly robbed scarps – there may be little correlation between the scale of the remaining defences and their original size. The assessments of defensibility made by RCAHMS and Ordnance Survey investigators in the field, that are implicit in site classifications (Chapter 3.4), can perhaps be seen as a clue to scale of defences across the hundreds of sites being examined – i.e. a 'fort' is likely, but far from certain, to have larger scale defences than a 'settlement'. Multivallation, or sites having more than one rampart, is another way that scale of defences has been incorporated into the analyses carried out in the three case studies. This forms a central part of the Kirkcudbrightshire chapter in particular.

Size of area enclosed is possible to determine, from either visiting the site itself, or use of satellite imagery and comparatively accurate site surveys, specifically Ordnance Survey 1:2500 plans. For multivallate sites, or locations where there are probably numerous distinct phases of enclosure, measuring the size of the interior can be more complicated. In most cases, the innermost enclosure of a multivallate site has been chosen, as opposed to the overall site footprint, as the most likely extent of the 'activity area' within the ramparts. There are many exceptions, and how site area has been determined and its significance will be discussed further in Chapter 5.

The landscape position of sites, particularly topographic prominence, will be the major focus of the three case studies. It is the main field where useful research can be carried out without either widespread excavation of sites, or landscape surveys as comprehensive as that carried out by the RCAHMS in Eastern Dumfriesshire (RCAHMS 1997), across all of these areas, both tasks requiring work that is not possible within the time frame of this PhD thesis. The landscape analyses are based on a number of premises:

- A site that does not have a role just as a farmstead may be positioned differently in the landscape, with respect to topography and farming land, than one that is primarily an agricultural settlement.
- Enclosed sites that are primarily defensive or military in nature may be more topographically prominent than others and may be much less likely than a farmstead to be located overlooked by nearby higher ground. They may also have higher visibility of their local areas, in order to view possible attackers.
- A site with ritual or ceremonial functions for the wider community might be unusually visible or, conversely, invisible in the landscape. It may have better long-distance visibility compared to short distance, for instance, or it might be spatially removed from other sites and habitual activity areas.
- An enclosure with a function primarily as a political or economic centre might have excellent visibility of regions of favourable agricultural land and of other settlement sites.

For a farmstead access to and from the land that the inhabitants farm and habitual visibility of that land are likely to be, in the absence of cultural, religious or defensive reasons, the prime considerations for site positioning, other than drainage or solid foundations. A 'not-farmstead' would probably have other priorities. It has been noted by the recent SCARF report that it is unwise to attempt to determine exact site function from the shape or position of a hillfort in the landscape, as the Wessex Hillforts Project found no relationship between activity patterns within hillforts and their morphology or landscape setting (SCARF 2012, 83-4; Payne et al 2006). This thesis is not attempting to do that – it is endeavouring to clarify the extent of the existence of patterns in the positioning, size and morphology of enclosed sites that might help to discover which sites may not have been farmsteads, rather than determine the function of particular examples.

Evaluations of the landscape positions of all enclosed sites in the three case study areas were carried out using Esri ArcGIS 10.1. The database of sites includes many that are very small and/or ephemeral like most classed as duns in Kintyre and Skye, brochs in Skye and settlements in Kirkcudbrightshire. To identify 'not-farmsteads' one must use a dataset that comprises many sites that are probably farmsteads as a background population. From that it may be possible to pick out those sites that differ from the probable farmsteads in positioning, and these may be more likely to have other functions. GIS is easily the best tool to use in order to identify these patterns, although its uncritical use has been subject to attack from a landscape phenomenological or post-processual perspective in recent years. An attempt has been made in Chapter 2 to address some of these critiques, although any macro-scale analysis of sites' landscape positions using Cartesian geography is inevitably open to criticism that it ignores the experiences of the individual actor in the landscape (e.g. Tilley 1994).

2. Theoretical background

2.1 Theories about hillforts

The aim of this thesis is to look for hillfort-like qualities among the later prehistoric enclosed sites of western Scotland. It is then important for us to put this in context, to define what these qualities were, and how we might recognise them. Developments in hillfort studies and interpretations have largely occurred in southern Britain, and most theoretical advances have been based on work involving southern British sites. Therefore any discussion of 'what is a hillfort' must begin in places such as Wessex, where from the medieval period to the 18th century, opinions differed as to who was responsible for them – King Arthur, Caesar, the Danes, and many other historical or mythological groups or figures (Cunliffe 2003, 9-15; Brown 2009, 14-16). By the early 19th century the prevailing assumption was that they were Roman forts, which is reflected in the names of many British hillforts today – there are at least six hillforts in southern England called Caesar's Camp, for instance. This theory was largely rejected by archaeologists in the Victorian period, with General Pitt Rivers (then Colonel Lane Fox) arguing that they were more in accordance with societies in 'the early conditions of savage life', and that they were 'isolated works, erected by several distinct tribes as a protection against the incursions of their neighbours' (cited in Cunliffe 2003, 10-11). He tested his hypothesis with excavations of several sites in Sussex, such as Cissbury and Mount Caburn, where so-called Celtic coins suggested that it and similar sites were prehistoric.

Perhaps one of the most important papers in influencing early 20th century thought relating to hillforts was that of Christopher Hawkes (1931), for whom the site-type was distinct in appearance and role. Indeed it was this article that reinforced the use of the term hillfort or hill-fort as a universal descriptor for large fortified enclosures in southern Britain, a word that reflected the unquestioned interpretation at the time that the sites were military in nature. Hawkes rightly lauded the achievements of 19th century archaeologists for defining them as prehistoric rather than 'the stark memorials of the Empire of Rome' as previously believed (Hawkes 1931, 60). For him they were a manifestation of 'the great Celtic expansion over Europe', the fortifications and dwelling places of a Celtic warrior elite representing successive Belgic invasions (Ibid, 62; 88-9). His interpretation of evidence available at the time dated most hillforts to the later pre-Roman Iron Age, or the 4th century BC onwards, unquestionably high status and defensive in nature. This opinion was shared by Childe, for whom 'hilltop towns' in Scotland, like Traprain Law or Dunpender, were the 'capitals of tribal groups' (Childe 1935a, 206). For Childe these large prominent sites were very similar to the hillforts of southern England and Gaul, a type of predominant Celtic settlement that reached Scotland due to successive invasions of people and ideas from the south.

The invasionist hypothesis was still the dominant theory at the time of Mortimer Wheeler's 1930s excavations at Maiden Castle in Dorset. Wheeler's extensive investigations of both ramparts and interior revealed multiple phases of rampart building, and long-term intensive occupation of the area enclosed (Wheeler 1943). He developed a convincing military explanation for the multiple, steep dump ramparts and complex entrances at Maiden Castle, arguing that caches of sling stones found near the entrances indicated that the complicated earthworks were sling platforms for defenders to rain stones upon potential attackers (Ibid, 46-7; also see Armit 2007, 28). The sheer outer ramparts were to slow down the attackers and expose them to more defensive fire, and to direct them to the entrances. Supporting this interpretation of the hillfort as military in nature was the 'war cemetery', linked by Wheeler to defenders killed by the invading Roman army (Wheeler 1943, 61-2).

Barry Cunliffe's excavations at Danebury in the late 1960s occurred following a period of considerable change in British archaeology. The advent of radiocarbon dating had provided evidence against the culture historians' consensus that social and political change was driven by movements of people, and the New Archaeology, of which Cunliffe was a foremost practitioner, shifted its focus to determining how societies worked and evolved in socio-economic terms. Cunliffe, and others such as Guilbert at Moel-y-Gaer (1975), concentrated on investigating the interiors of hillforts, and the many deep storage pits and small square four post structures he unearthed gave weight to the theory that they were central places. For Cunliffe, hillforts functioned as locations for wider communities to store grain and perform craft activities, and as a place for the higher echelons of society to live (Cunliffe 1984; 2003). He hypothesised that they were at the peak of the settlement system, and specific territories could be ascribed to each hillfort, a hierarchical model of society that was derived from Irish medieval descriptions of Celtic society as one of kings, nobles and free client farmers. Their defensive role was still assumed, but was not as central to his analysis as for earlier researchers.

It is important to note that most modern excavations of and research into hillforts in Scotland have been greatly influenced by Cunliffe's Danebury model. Cunliffe's work was broadly in agreement with the earlier theories of Childe regarding 'hilltop towns', and similar themes can be seen in Richard Feachem's roughly contemporary paper on the hillforts of northern Britain (Feachem 1966). Feachem compared large enclosures like Eildon Hill North, Traprain Law and Hownam Law to 'minor *oppida*', or smaller versions of the huge settlement enclosures generally associated with the La Tène Iron Age in central, northern and western Europe (Ibid, 77-82). Specific forts were assigned to particular historically documented tribes, for example Eildon Hill North to the Selgovae or Walls Hill in Renfrewshire to the Damnonii, showing the continuing influence of the culture historical paradigm in Northern British research. Few investigations of Scottish forts have progressed beyond Cunliffe and processual archaeology in theoretical terms – major excavations at Broxmouth in East Lothian (Armit & McKenzie 2013; P. Hill 1982), Burnswark in Dumfriesshire (Jobey 1978), Dunadd in Argyll (Lane & Campbell 2000), Dundurn in Perthshire (Alcock et al 1989), and the Mote of Mark in Kirkcudbrightshire (Laing & Longley 2006) have all been primarily interpreted through an overtly processual lens.

Direct criticism of their military role, notably by Bowden and McOmish (1987), led to a reappraisal in interpretations of the function of hillforts and their position in later prehistoric societies. Bowden and McOmish (1987, 77-78) specifically questioned the defensibility of hillforts, arguing that the outer ramparts at sites like Maiden Castle would actually have given any would-be attackers shelter from defensive fire, and identifying the military weakness of forts such as the Chesters in East Lothian, a complex multivallate earthwork which is overlooked by a higher hill less than 100 m away. In this case, due to the defensive weakness of the position, the extra ramparts and elaborate entrances could arguably not have been for practical defensive purposes. Therefore display, or giving the appearance of strength and status, may have been more important than actual defence. This interpretation was influenced by early post-processual thinking, most notably Hingley's work on the meaning of enclosure in defining distinct social groups (Hingley 1984). Boundaries could be seen as dividing those inside from those outside, and entrances were a method of mediating movement from one type of space (outside) to another (inside) (Hingley 1984, 22). Elaboration of those entrances blocked vision of the interior and made the hillfort, and its inhabitants, appear more impressive to those outside.

A series of volumes were published in the 1990s and 2000s containing many papers that developed and expanded on post processual approaches to the Iron Age (Hill &

Cumberpatch 1995; Champion & Collis 1996; Gwilt & Haselgrove 1997; Haselgrove & Moore 2007; Haselgrove & Pope 2007). Most attempted to interpret the archaeology of the period from the perspective of the actors or the people themselves, rather than as an observer analysing patterns from a distance because, as Gwilt and Haselgrove (1997, 1) put it, 'society has no existence independent of people'. Thus the way that prehistoric people understood the world was fundamental to their actions, and how societies functioned economically and politically was indivisible from religious belief or the social norms that governed how people interacted. Ideology was central to people's relationships with the objects they used and the structures they constructed, for example Oswald (1997) and Parker-Pearson et al (1996) argued that the south eastern or eastern orientation of most roundhouses entrances in Britain could be explained in cosmological terms. The meaning of enclosure and the social and mental implications of boundaries, as well as the ways in which Iron Age people structured the enclosed spaces, were central to this new way of interpreting the British Iron Age.

J.D. Hill (1995; 1996) attempted to readdress the issue of the role of hillforts and the part that they and their inhabitants played in later prehistoric societies. He specifically criticised Cunliffe's model which, in his opinion, assumed clear settlement and social hierarchies that did not reflect the archaeological evidence, and was based on a model of a universal 'Celtic' society derived from Classical and early Medieval literary sources. For Hill, drawing inspiration from the work of Barrett (1986), the assumption that 'biggest was best' implicit in processual interpretations of hillforts was a product of 'the fetish of central place theory of the 1970s… combined with a more deeply rooted fetish, Celtic Society' (1996, 95). Excavated evidence from hillforts showed that assemblages from most hillforts did not include unusually high concentrations of 'high status' objects normally associated with a Celtic aristocracy, and house size was not necessarily bigger inside hillforts than in smaller enclosed settlements. Few hillforts shared the concentrations of pits and four post structures indicating grain storage found at Danebury and Maiden Castle, and occurrences of specialist or craft activity at hillforts did not differ notably from sites traditionally considered further down the settlement chain (J. D. Hill 1995, 47-9). Thus, hillforts differed from other settlements in terms of the size of the area enclosed and the scale of their enclosing works, but no clear evidence existed that all such sites were necessarily at the centre of an economic system or at the top of a settlement hierarchy. Sharples (1991, 259) also pointed to the 'uniformity' of assemblages from Wessex dating to this time period and argued that the only possible indicator of hierarchy was that some settlements were enclosed by large-scale defences and some not.

Hill (1995, 50; 1996, 107-110) proposed that too much variety was apparent among hillforts to see them as a coherent entity, but instead what united them was that they were not farmsteads. This theory of hillforts as 'not-farmsteads' is central to the research taking place in this thesis – what I am trying to identify is those sites that may have had purposes other than simply places for farmers to live and perform activities directly related to subsistence agriculture. Hill also addressed a second, related, problem, and that is, while most earlier researchers had believed that hillforts 'needed no introduction' (Hawkes 1931, 60; Anderson 1883, 271-2), there is no clear distinction between smaller or less strongly defended hillforts and larger enclosed settlements (J. D. Hill 1995, 50). For Hill, if hillforts were a varied group of sites associated with activities that were different to that of agricultural settlements, when does a farmstead stop being a farmstead and become something else? That this problem was apparent even in Wessex, where hillforts are among the largest and most visually impressive in Britain, emphasises how it was even more pronounced in Northern Britain, and especially Scotland, with multitudes of smaller fortified sites and few sites of the scale and complexity of Maiden Castle, Old Oswestry or Danebury.

If hillforts were not farmsteads, but not all defensive or necessarily high status, what were they? Hill emphasised the large range of roles that they could have had, while espousing a definitively Marxist interpretation of social, economic and political structures in Wessex. He, again drawing upon Hingley's (1984) work, argued that individual households emphasising their independence with boundaries were the 'building blocks' of society (J. D. Hill 1995. 51). For such a wider community to function, in reproductive terms as well as politically and economically, these households would have to come together – only with communal sites could a system based on isolated independent enclosed family groups work. These communal sites may not necessarily have been permanently occupied, and the elaborate entrances, multiple ramparts and prominent locations would serve to mark them and the space enclosed by them out as special, as 'spaces different to normal spaces' (*Ibid,* 53). Thus they were symbols of the wider community that built them. For Lock (2011, 359-60), the symbolic role could be taken further – the act of building and maintaining ramparts, together with associated ritual activities (supported by likely ceremonially deposited objects near hillfort entrances) fostered a sense of community through which hillforts became 'metaphors for social cohesion'. The communal role of hillfort building has also been posited by Sharples (1991; 2007; 2010), albeit emphasising the political control over people and/or the communal integrity that must have been associated with construction and maintenance of massive defences such as those at Maiden Castle (2007, 179-181).

The question of whether hillforts were defensive in nature has become central to interpretations of whether Iron Age Britain was a violent place or not, whether warfare was endemic, sporadic or non-existent. Sharples (1991, 259) notably rejected Bowden and McOmish's argument that hillfort defences were not defensive as 'unconvincing'. Neither Collis (1996), nor J. D. Hill (1995; 1996) completely rejected that they may have had a communal defensive function. Both Sharples (1991) and James (2007) have hypothesised that warfare was widespread in the Iron Age**,** and Armit (2007, 32) has attacked the widespread 'pacification' of hillforts as unhelpful and unrealistic in light of demonstrable evidence that warfare in non-state societies is 'more endemic and proportionally more destructive than in modern nation-states'. This view was subsequently rejected by Lock (2011) who argued that widespread warfare in the Iron Age should not be assumed and that available archaeological evidence was not sufficient to support it. Two recent large-scale hillfort excavations have added to the previously scant body of evidence for violence at hillforts, however. Investigations at Fin Cop in Derbyshire in 2009 and 2010 revealed an apparent massacre where a large group of women and children were killed at the same time and thrown in the hillfort ditch (Waddington 2012, 223-230), interpreted by the excavator as the 'sacking' of the fort. Disarticulated and partially articulated human bone showing evidence of violent death and subsequent defleshing was found by archaeologists from Cambridge University at Ham Hill, Somerset (Brittain et al 2014). It appears that the large-scale killings of people, the majority female, within a rectilinear enclosure in the hillfort interior, may have been accompanied by public display of the bodies, interpreted by the excavators as part of a ceremonial activity (*Ibid*, 200-5). Whatever the reason, the large number of individuals subject to violent death that have been recovered from only a partial excavation of an enclosure in a very large hillfort suggests that a minimum of hundreds of human bodies may be interred at Ham Hill.

A strong argument could be made that these theoretical and interpretive developments, based as they are in the archaeology of Southern Britain, are of lesser relevance when it comes to analyses of the enclosed sites of Scotland (e.g. Armit 1999, 72-3). Scotland has had its own trajectory with regards to Iron Age archaeology, particularly in the first half of the 20th century, when, in Piggott's terms, it 'had moved into a distressing period of isolation' (Piggott 1966, 2). Since then the Scottish Iron Age has become more closely aligned with south of the border in theoretical terms (e.g. papers such as Barrett 1981; Armit 1997(a); Sharples & Parker Pearson 1997; SCARF 2012), albeit most interpretations and analyses of forts remain resolutely processual in nature. Any analysis of hillforts in Scotland needs to at least acknowledge the impact of research based south of the border in our understanding of large fortified enclosures, while not unthinkingly applying the interpretations made by researchers in those regions to Scottish sites. Arguably southern Britain is still the only place where enough large-scale excavation has taken place and with sufficiently comprehensive dating to really attempt to understand the function of large prehistoric hilltop enclosures. Thus, the history of debate concerning these large enclosures, mostly centred on England, is also relevant to sites that may share similar characteristics in western Scotland.

Perhaps the most significant impact that the debate surrounding hillforts in the last twenty years has had is in widening our frame of discourse, or opening up of a variety of new functions that these sites may have had both for individuals and wider societies. In a recent synthesis, Harding while arguing against the 'naïve Neo-Romanticism' of some post-processual interpretations giving apparent insights without 'the demands of traditional scholarship' (Harding 2012, 51-2), discusses a range of possible interpretations for hillforts, such as their role as community symbols, and their possible involvement in ritual practices (Harding 2012, 269-92). It is notable that the symbolic and ceremonial aspects are much more to the fore in his 2012 synthesis than in a 1979 paper by the same author, which in itself was ahead of its time for even discussing ceremonial functions (Harding 1979). This shows the impact of post-processual interpretations on those archaeologists who themselves work in a resolutely processual, empirical, scientific framework. For Harding (2012) hillforts clearly fulfilled many roles, including defensive, religious, symbolic and economic. Some forts may have had many of these function, to a greater or lesser degree. Some may have been high status – the example he gives is the historically documented royal sites of northern Britain (Chapter 3.3) – and many may not have been.

The multiplicity of plausible explanations for and interpretations of hillforts complicates our attempts to locate them amongst the enclosures of western Scotland, and therefore the simplest and most universally accurate definition has been adopted in this thesis – they are those enclosed sites that are not just farmsteads.

2.2 Classification in settlement archaeology

Ideally when attempting to analyse a large amount of data about a group of archaeological sites, one would wish to do so with a dataset that has either not been classified or whose internal classifications are clear, unambiguous and empirically demonstrable. To completely ignore previous classifications and start with a clean slate is tempting, but to do so would cognitively remove the work undertaken in this thesis from the previously described body of rigorous academic work that has been carried out in parts of western Scotland and render that important resource less useful. Enclosed sites have been pre-classified. It is therefore important to understand how and why they have been categorised as they have been and to explore how or whether present site classifications are useful in the context of the sites being investigated in this thesis.

Categories have been used as long as archaeology has existed as a discipline as an analytical tool to understand the bewildering array of archaeological material that would otherwise overwhelm us. Classification as a way of understanding the world stems from classical Greek philosophical works such as Aristotle's 'Categories', which attempted to answer the question of how and why we define objects and living beings. Humans have been classifying their own environments, defining what in their surroundings has similar or identical attributes, for most of their lives – archaeological classification is an extension of this process. General textbooks or introductions to archaeology invariably include a discussion of how archaeologists divide material into classes or typologies (e.g. Renfrew & Bahn 2008, Chapter 4), but few have questioned the validity of classification itself. In the theoretical sphere, however, there has been considerable debate as to the 'reality' of archaeological types with some arguing that specific categories are only real because we as archaeologists have created them (O'Brien & Lyman 2002, 41; summarised in Poller 2005, 66-9), and may not bear a resemblance to how the original users or occupiers of those objects or monuments might have categorised them. Traditional, standardised typologies do not fit easily within the varied post-processual research frameworks that many archaeologists employ today. When we, as archaeologists, are trying to see the landscape through the eyes of a prehistoric person, how can we know that they might have distinguished conceptually between a 'semibroch' and a 'broch', or a 'dun-enclosure and a 'fort'?

Yet classification of some kind is a useful and essential tool in making sense of the archaeological evidence and in structuring and communicating the thoughts of archaeologists. It is important however, to understand where the classifications that we do use come from and what we are trying to achieve when we categorise sites. Are we implying that the different classes that we choose had specific roles and were conceptually different to people living in the past, or are the separate categories that we create a tool to separate sites that have measurably different characteristics in the present day? The production of the latter type of classification does not of necessity involve any interpretive dimension – interpretation if desired must be added retrospectively - while in the former case interpretation and subjectivity are more likely to be intrinsically involved in the determination of classes. For instance, if an enclosure is defined as a fort because an archaeologist has visited it and decided it is a fort due to its defensive nature, it is implying that it was used, and viewed by those who used it, as a defensive structure. If on the other hand, an archaeologist empirically demonstrates that a series of enclosures are placed in topographically prominent positions, with excellent visibility and massive defensive ramparts, then he or she can initially class them as distinct from sites that do not share these characteristics, and then hypothesise that the reason for these attributes is that they were defensive structures. One could then critique the first method by exploring whether all enclosures conventionally defined as forts had measurable characteristics in common.

Baines (1999, 64) has notably distinguished between two major reasons for classifying sites and monuments:

> "i. The organisation of a known field resource for the purposes of administration, mapping, management or curation,
>
> and
>
> ii. The grouping of sites and monuments *thematically*, according to criteria which may be structural/formal, or chronological, for the purposes of further interpretation."

The contrast between these two ideas is important in the context of this thesis. The former is the reasoning behind the current classificatory systems commonly in use in Scottish archaeology. Sites have been classified by RCAHMS investigators mainly due to qualities that have been assessed in the field. Categories used and conceived to aid in data collection are not guaranteed to be useful or even relevant once archaeological information from other sources is applied. For instance, the logic behind the dun category in Argyll falls apart when chronological information, from duns dated to over a millennium apart like Loch Glashan and Kildonan Point, is applied (Henderson & Gilmour, 2011, 92-6). The type of categorisation in part two of Baines' definition is analytical, and it is the kind of classificatory framework that I am attempting to work within in the case studies in Chapters 7 to 9. That is, the classification of sites based on their size, shape, observable architectural attributes, and particularly the empirically measurable aspects of their landscape position. This kind of categorisation does, however, require the abstraction of many site attributes, and risks losing unique aspects of individual sites which may be crucial in understanding them. Therefore traditional site classifications, such as fort and broch, have not been entirely removed from my analyses. They have been included both to critique their viability as site categories, and to add an extra layer of information about sites, and where they have been employed they have been used critically in full knowledge of their imperfections.

2.3 GIS and archaeological theory

The main focus of the analyses carried out in the three case study regions in this thesis is on the landscape position of sites, and for this ArcGIS has been used. Geographical Information Systems (GIS) allow archaeologists to process and interpret vast amounts of spatially referenced data in a relatively short space of time. They enable spatial relationships between sites to be explored in three dimensions – a major advantage over distribution maps - and inferences made as to the social and economic structures of past societies. Various kinds of GIS packages are habitually used by local authorities, commercial archaeology units and individual archaeologists to store, disseminate, analyse and illustrate archaeological data. GIS use has moved beyond the GIS expert and can now be utilised as a tool by non-specialist archaeologists to solve archaeological problems. For Westcott and Brandon (2000, backcover) it is 'the most powerful tool to be applied to archaeology since the introduction of carbon 14 dating'.

Acceptance of GIS-based methodologies in landscape archaeology has been far from universal however. They can and have been seen as the kind of distant, empiricist, and abstract research criticised by phenomenologists such as Tilley (1994; 2004; 2010). Central to this is the question of whether GIS is an atheoretical tool or whether it is inevitably, inherently theoretical, its very use damning the user to a God-like position far from the minds and perceptions of the people whose lives it is attempting to interpret. For Thomas 'digital technologies reduce the past to a pattern of pixels, viewed on the screen of modern rationalism' (2004, 201), they are objective, separate from the subjectivity of individual experience, a product of a comparatively modern Enlightenment way of viewing the world. We cannot use them to truly experience the past in a holistic, experiential way. Therefore to use GIS is already to take a theoretical position, accepting that past landscapes can be viewed and explored from a distance and that the numbers and patterns generated can and do represent a relevant reality that tells us something valuable about the past.

These criticisms of GIS are similar to those levelled at distribution maps and Cartesian geography in general. For Tilley the map is an embodiment of the reduction of space to merely a container for things, which archaeologists believe can be accurately measured and analysed to discover spatial process and causality between distributions of dots located within it (Tilley 1994, 7-11). According to Tilley (and landscape phenomenologists in general, e.g. Thomas 2004; 2008; Bender et al 2007; Tilley 2010) space cannot be completely abstracted from action and cannot be quantified so easily. It is instead a medium for action, something that is subjective, that each group or individual perceives differently. Cartography can reduce the subjective emotions and experiences involved in the individual understanding of that space into one specific overarching interpretation of it that trumps all others, and presents that as unarguable mathematical reality. It has been argued that GIS takes this one step further, with the popular assumption that the version of reality that it presents is underpinned by information technology, its illustration by colourful, professional-looking graphical representation (Witcher 1999, 14). This version of reality could be viewed as desanctified, devoid of the values, myths and stories that ancient peoples may have associated the space with, and conclusions reached about the relationships between sites within it are fundamentally flawed from a phenomenological perspective. When used uncritically techniques like predictive modelling assume that human beings may make predictable decisions based purely on environmental stimuli and have rightly been criticised for 'de-humanising' the past (Ebert 2000, 137-142; Wheatley 2004, 6).

Yet the contention made by Thomas (1993, 25) that past inhabitants of a landscape would hardly recognise a map-like version of the world can certainly be contested. Wheatley has argued that maps have a history that long pre-dates the Enlightenment, with candidates for the earliest map dating from 6200BC Çatalhüyük (Wheatley 2014, 117-8), and that it is wrong to presuppose that prehistoric people were unable to think in such a way – it is conceivable that it is a cognitive ability that humans have to greater or lesser degrees depending on environment and culture. While it is true that map-like frameworks represent one idealised way of seeing and structuring space, it is a framework that exists – it can be empirically proven and analysed. Patterns resulting from relationships or repeated actions within that framework occur whether the people that caused those patterns knew it or not. So long as archaeologists are aware of the framework in which they are working and cognisant of the limitations of the techniques that they are using then map-based, Cartesian systems, such as that used in GIS, have value. If attempts are made to place the observer more in the landscape, investigating perception, modelling how former inhabitants of a landscape may have perceived it, then map-based systems have more potential value still.

The principal method that has been used in GIS-based studies to simulate human perception of the landscape is visibility analysis. Viewsheds calculate whether a direct line can be drawn without obstruction between one point on a surface and another. In archaeology we use Digital Elevation Models or DEMs to create a model of the topography of a landscape and the viewshed calculates the range of visible land from an observer point (or line or series of points). The capacity for viewshed analysis to accurately measure or recreate human perception has repeatedly been criticised from both a theoretical and methodological point of view. The methodological criticisms have tended to focus on making the computer-generated viewshed a more realistic representation of human vision and will be addressed in detail later (Chapter 6). More fundamentally, several authors have argued that the pre-eminence of vision over other senses such as smell or hearing is uniquely Western and modern, resulting in 'uncritical and often unthinking visualism' (Ingold 2000, 281-5; Thomas 2004). People experience their surroundings through a combination of all their senses and there is no reason to believe that vision is naturally any more important than the others, for example sound takes precedence over vision in the heavily forested environment of the Umeda of New Guinea (Wheatley & Gillings 2000, 12). The relative importance of different senses may be environmentally or culturally determined, but no one sense ever functions completely independently of all others, making GIS-based visibility analyses an apparently unrealistic and unreliable way of modelling perception.

Recently, however, Llobera (2007) has argued for the primacy of vision over other senses, asserting that examples such as the Umeda are the exception. For him vision is the sense that contributes most to an individual's perception of space, which is supported physiologically by the size of the visual cortex in the brain. Visibility is also much more permanent than other senses – it is possible to approach recreating vision, but smell or sound are normally so temporary that attempts to recreate them can only be speculative (also Lake & Woodman 2003, 691-2). Furthermore we know that certain monuments were definitely positioned to be seen giving us 'an entry point into past intentions' (Llobera 2007, 52-3). For Wheatley there is at least some evidence that humans are wired to prioritise vision above other senses citing examples such as the 'ventriloquist effect' where our perception of where a sound is coming from is overridden by a concurrent visual stimulus (2014, 6).

A valid criticism of (particularly early, including pre-GIS) visibility studies is their unthoughtful or informal usage involving common-sense interpretation. Several examples lacking inferential rigour are cited by Lake and Woodman, for example an early examination of the intervisibility of Roman towers on the island of Hvar (Gaffney & Stančič 1991; 1992), or a study of the intervisibility of hillforts by Ozawa et al (1995), both of which concluded that the respective site types were positioned in order to be intervisible but did not attempt to determine whether that intervisibility may have happened only by chance. Intervisibility of sites does not offer proof that those who constructed or used those monuments ascribed any particular significance to their visual relationship. This association may be accidental, a product of other reasons for their siting – for example hillforts may be on hilltops for defensive purposes unrelated to visibility, such as using the terrain as a natural barrier, and may inadvertently be able to see each other. Also in some cases only those monuments that are most visible may have survived in the archaeological record, with sites on rocky high ground generally more likely to be identifiable for archaeologists than those in lower, more agriculturally fertile positions (Brück 2005, 51-2). Even if deliberate intervisibility of monuments can be proven, demonstrating this is not an end in itself – it is not sufficient to prove the existence of some kind of symbolic or ritual link without further evidence or argument.

Most recent visibility studies have introduced some kind of background sample to compare the visibility of sites against by means of some kind of statistical test, for example a Kolmogolov-Smirnov (K-S) test (e.g. Bongers et al 2012; Garcia 2013; Gonçalves et al 2014). Wheatley's (1995) study of long barrows of the Stonehenge and Avebury groups compared site intervisibility with a background cumulative viewshed population, determining by means of a K-S test that the barrows of the Stonehenge group were deliberately located to be intervisible, while there was no evidence to suggest that the Avebury group was anything but randomly placed in respect to each other. Llobera et al (2010), enabled by improving computer processing power, expanded on this idea further with the development of the 'total viewshed' calculating the inherent visibility of every point in the landscape in order to provide an accurate background sample against which cumulative viewsheds of sites could be statistically assessed. With these developments visual relationships between sites and/or places can now be demonstrated beyond reasonable doubt.

Despite these attempts to model perception, it seems unlikely that GIS and experiential theory can ever be completely reconciled. GIS can still be seen as the very embodiment of the God-trick, a methodology that views and measures space from an 'outside' position. Attempts to model the experiences of humans in the past with GIS are necessarily flawed more due to our inability to ever accurately measure the subjectivity of human experience in the landscape than specific methodological issues. However this is also true of landscape phenomenology as envisaged by Tilley, which has come under increasing attack recently on both methodological (Fleming 1999; 2006) and theoretical (Brück 2005; Barrett & Ko 2009) grounds. It does not hold true that any archaeologist can rid him- or herself completely of bias and become a completely impassioned, yet subjective, observer experiencing a place from 'inside' – experiential archaeologists embedded in the landscape are interpreting it through the lens of their own ways of understanding the world which themselves are products of a certain intellectual tradition. Thus a major criticism of GIS – that it cannot step outside of modernist ways of conceptualising space - can itself be applied to landscape phenomenology. For Barrett and Ko 'perspectives are partial and situated; they are prejudicial and historically specific' (2009, 285), and even Thomas admits that we as observers are always socially embedded in a landscape (2004, 216-7). According to Brück it is 'unlikely that simply walking through a building, monument or landscape.. will provide us with an authentic insight into the experiences of ancient people because those experiences are historically constituted' (Brück 2005, 56). Using personal experience as our only means of interpreting former landscapes can surely only result in a flawed and idealistic version of the past if we are not able to escape our own historically constructed ways of thinking. This does not even address the impossibility of perceiving places in the way a prehistoric individual or group would, an experiential gap that cannot sufficiently be bridged by drawing on anthropological examples.

Gillings has recently bemoaned the lack of theoretical discussion between post-processual landscape archaeologists and GIS practitioners, with debate between the two sides apparently 'stymied by an almost wilful reluctance on the part of landscape theorists to engage in meaningful dialogue' (2012, 602). A recent attempt to bridge this gap on the part of GIS theorists is the concept of 'affordances'. Affordance is a term created by Gibson (1979, 27) to describe what the environment 'offers the animal, what it provides or furnishes, either for good or ill', although it is debatable whether these affordances exist only when an animal is present (selectional) or whether they are inherent qualities of the landscape (dispositional). Instead of trying to model an individual's perception of a landscape as he or she moves though it as accurately as possible, archaeologists can try to examine what the landscape might potentially offer humans. Affordances are not necessarily just resources, but also qualities of the landscape itself, such as topography. Llobera (2001) has attempted to model topographic prominence as an affordance of a landscape, with prominence defined as the percentage of land that lies beneath an individual's position. A model was created in GIS to examine the relationship between prehistoric archaeological monuments in the Yorkshire Wolds and topographic prominence, showing different local and distant prominences for different categories of site - for example Bronze Age round barrows were very prominent over a long distance, but Iron Age square barrows were prominent only locally. Gillings (2012) has argued that GIS-based techniques inevitably tend to stop at establishing that there is some kind of relationship between people and a specific characteristic of their environment, but 'this merely marks the starting point for an investigation of experiential affordance' (2012, 609). It is up to the archaeologist to build on this proven relationship with further analysis and interpretation.

For the purposes of these case studies an attempt is being made to use GIS-based techniques as a method for generating data about the relationship between sites and the landscape. It is envisaged that the results of the GIS-based analyses that have been carried out may allow patterns in site location to be identified, which may be linked to other aspects of sites, such as their size or morphology. It is acknowledged that the data generated is not theory-neutral, yet it is measurable, uses the best available datasets and the associations that it makes can be empirically demonstrated. Furthermore, the ability of an archaeologist should not be in pushing the buttons but instead in making informed interpretations of the results, aware of the imperfections of their methodology.

3. Survey, excavation and classification of forts in Scotland.

3.1 Antiquarian research and early Inventories

Much of the information that this thesis is based on comes from the visits of RCAHMS and Ordnance Survey site investigators who, for many enclosed sites, are the only sources of archaeological information. The survey reports of investigators can be found on the CANMORE website (canmore.org.uk), providing an insight into the history of survey and classification for individual monuments. Successive surveyors have not always been in agreement about aspects of the architecture, morphology or categorisation of many sites. The interpretations made, and methodologies employed, are products of a long history of research into later prehistory in Scotland.

Fortified sites in Scotland were a target of particular antiquarian interest. Several were surveyed by William Roy while he mapped most of Scotland in the 1750s, and he considered them to be the legacy of the Romans (Roy 1793). Excavations were carried out in the 18th century, notably at Dunsinane Hill in Perthshire (Playfair 1819) and by Sir Walter Scott at Green Cairn in the parish of Fettercairn, Angus (SCARF 2012, 4), but it was vitrified forts that stimulated much early debate. Vitrified stone is distinctive in that stones appear fused together and glassy, while some are cracked and exhibit bubbling on the surface. Early visitors to these sites thought that the masses of vitrified stone on the surface could have been produced by volcanoes (Ralston 2006, 147), but John Williams, upon investigation of the fort of Craig Phadrig near Inverness, correctly identified the structures as manmade objects that had been subject to considerable heat (Williams 1777). Vitrified forts like Tap O'Noth in Aberdeenshire formed a major part of Wilson's account of Scottish 'strongholds' in the mid 19th century (Wilson 1851). For him they, like other forts in Scotland, could be ascribed to the Romans, Danes or Saxons as fortified camps of invading armies (Halliday & Ralston 2009, 457). The results of many early excavations were synthesised by Joseph Anderson (1883), who critiqued the methods used, to that date, in investigating Scottish hillforts, as imprecise. Anderson believed that forts 'differed essentially' from other monuments due to their overtly defensive positioning, and he divided them into two groups based on their primary method of construction – earth or stone (Anderson 1883, 271-2). He argued strongly for a more scientific approach to research, incorporating accurate plans and observations about constructional techniques, to enable groups of monuments with shared characteristics to be defined.

An increasingly scientific methodology was evident in the systematic survey programmes of David Christison and Frederick Coles. Christison, in his survey of the forts of Peebleshire, determined to 'study these remains carefully, to describe them as they are, rather than to speculate as to what they may have been, and by means of plans and descriptions to afford facilities for comparing them with similar works in other districts' (Christison 1887, 14). Accuracy was of great importance in his surveys, and he included measured cross-sections with his plans to further increase the authenticity of the depiction (Figure 3.1). His work was a departure from writers such as Wilson, whose approach had been much less scientific, and Christison's methods were to influence many others. Coles' accounts of the fortified sites of Kirkcudbrightshire (Coles 1891; 1892; 1893) were noticeably similar to those of Christison in Peebles and Selkirk/Roxburgh (Christison 1895), in that they concentrated on empirical evidence, on measurement and situating the monuments in the wider landscape, and on accurate plans and cross sections rather than speculation about the origins and functions of sites (Figure 3.2). A uniformity of style was adopted across the descriptions and plans produced by Christison and Coles, which is also apparent in the approach used by the early Royal Commission Inventories beginning with the survey of Berwickshire at the beginning of the 20th century (RCAHMS 1909).

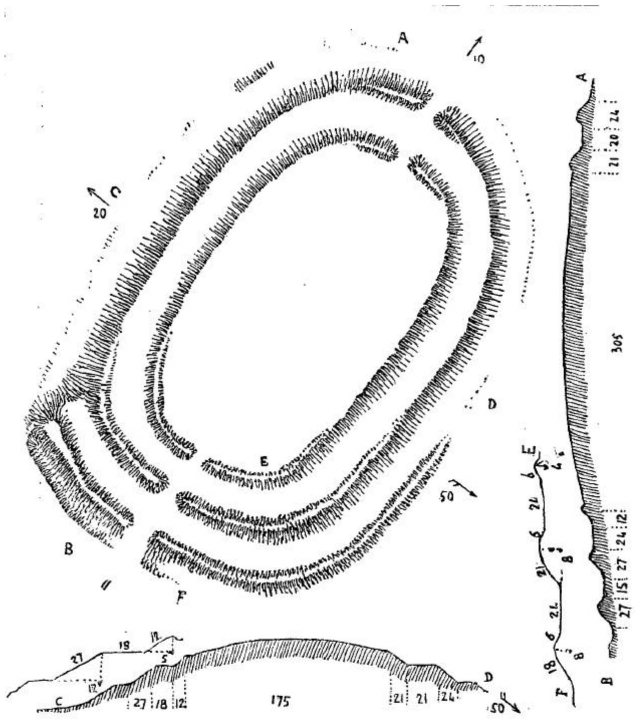

Fig. 41. Ringknowes, Hallmanor.

Figure 3.1: *Christison's plan of Hallmanor fort, Peebleshire. The carefully measured nature of the drawing is evident, along with two cross sections. After Christison 1887, 56.*

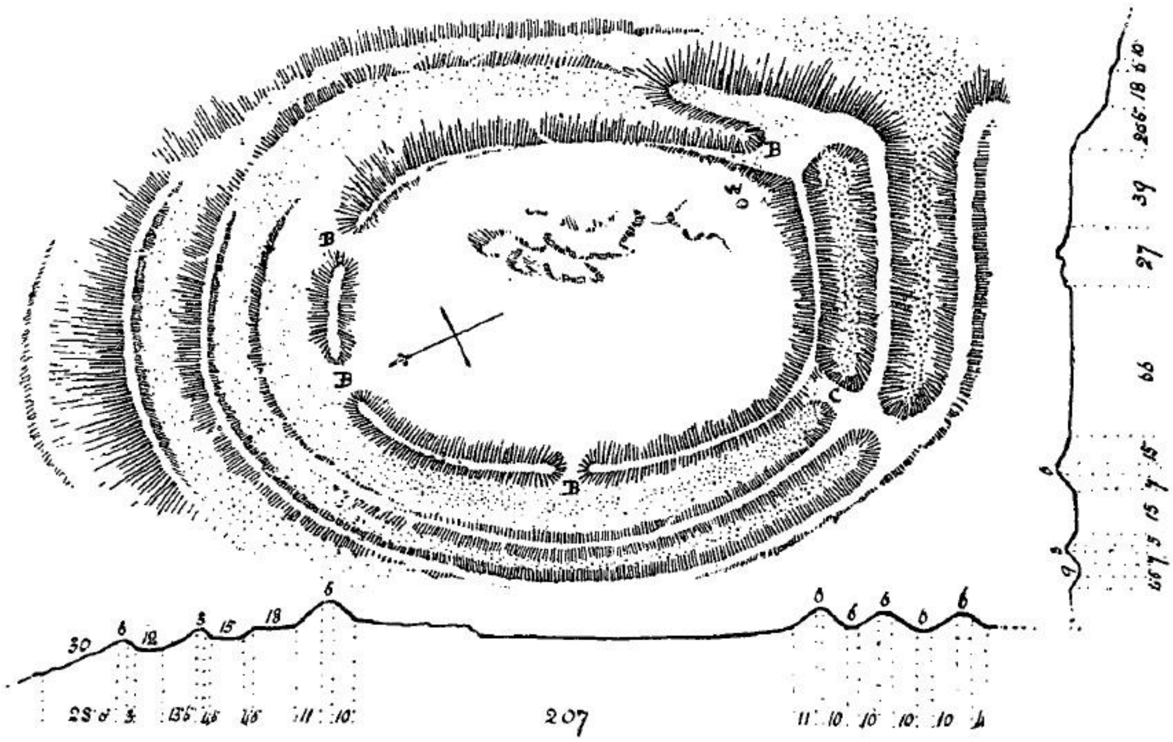

Figure 3.2: *Coles' plan of Drummore Castle, Kirkcudbrightshire. The method and style are clearly influenced by Christison. After Coles 1891, 359.*

These Inventories were designed to record known monuments, the Berwickshire inventory including only sites that had been depicted on OS mapping, with no attempt to locate previously unrecorded structures. Halliday and Stevenson (1991, 131) have described the early Inventories as essentially 'archaeological and architectural commentaries on the County Series 6-inch maps', which was essentially true until the 1956 Roxburgh survey. Sites that had been identified from the air in the 1940s, during the National Air Survey, were incorporated within the Roxburgh Inventory. This enabled the inclusion of palisaded settlements and ephemeral earthwork enclosures that had previously been unrecognised (Halliday & Stevenson 1991, 131-2).

3.2 The early 20th century

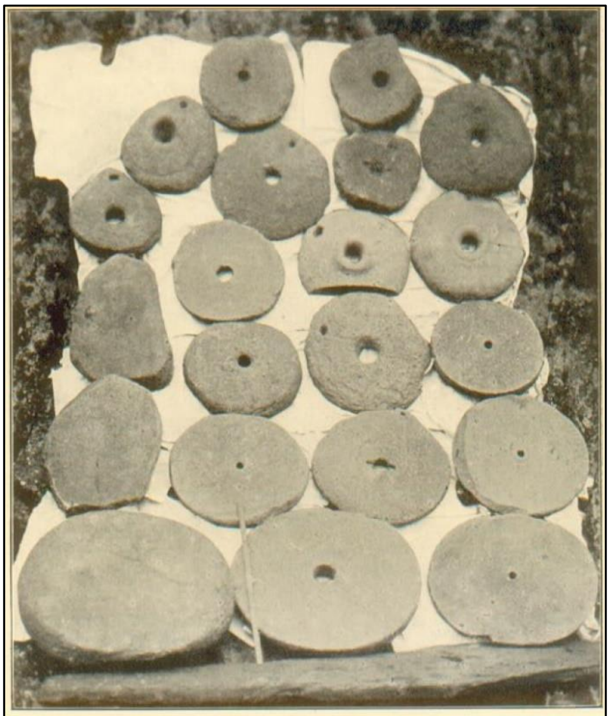

Fig. 29. Eighteen of the Quern Stones and the three Grain-rubbers found in Dunadd.

Figure 3.3: *Some of the rotary querns found by Christison at Dunadd. After Christison & Anderson 1905, 309.*

Several fortified sites in Argyll were excavated at the beginning of the century – Ardifuir, Duntroon, Druim an Duin and Dunadd (Christison & Anderson 1905). While Christison's earlier surveys have been commended as pioneering and groundbreaking, his excavations at Dunadd were of an extremely poor standard, with no detailed plans, and incorporating no concept of stratigraphy (Harding 1979, 2). This lack of accurate recording was especially unfortunate given the exceptional assemblages recovered during these excavations, for example fifty or so rotary quern stones at Dunadd (Figure 3.3), or the large quantity of pottery and polished stone objects at Ardifuir. Christison did note the contrast between a saddle quern assemblage found at Duntroon and the mostly rotary querns unearthed at Dunadd, concluding that the two forts may have been of different dates (Christison & Anderson 1905, 278-9). His excavation of Duntroon, a vitrified fort, was the first large-scale investigation of such a site, and the relative dating of vitrified forts compared to others was a central theme of his investigations. Another vitrified fort, the Mote of Mark in Kirkcudbrightshire, was targeted by Alexander Curle around this time (Curle 1914). The exceptionally rich metalworking assemblage and large quantities of imported prestige items unearthed at the Mote of Mark were dated by typology to the late 1st millennium AD, and Curle believed that the site was an Iron Age fort that had been reoccupied in the early Medieval period (Curle 1914, 164-8). Also at this time Curle and James Cree began a series of excavations at Traprain Law, one of the largest forts in Scotland, which dominates the East Lothian plain, identifying Bronze Age and Roman period occupation of the hilltop (Curle 1915; 1920; Curle & Cree 1916; 1921; Cree 1923; 1924). Investigations of the smaller enclosed sites of the Atlantic fringe were also undertaken in the early years of the 20th century, with a number of excavations of brochs on Skye and Orkney (Macleod 1915; Callander 1921; Callander & Grant 1935), as well as excavations and a comprehensive survey of small fortified sites by Erskine Beveridge on Coll, Tiree and North Uist (Beveridge 1903; 1911).

Christison (1895) made the earliest attempt to create a distribution map of forts across Scotland, with sites classified into four categories by size, drawing heavily upon distributions identified by the Ordnance Survey. Forty years later, Gordon Childe (1935a) produced an updated national map of fortified sites, as a part of his new synthesis of Scottish prehistory. Childe's arrival has been described as a marker of the beginnings of professional archaeology in Scotland (SCARF 2012, 5), and he carried out numerous excavations of fortified sites in the early 20th century. He, like others before him, had a fascination for vitrified sites, leading to investigations at the oblong hilltop fort of Finavon in Angus (Childe 1935b), and the small, circular enclosure of Rahoy in Argyll (Childe 1937). Childe (1935a, 193-211) divided forts into several categories – 'Gallic' forts, vitrified forts, castles, hilltop towns and small forts. His site classes were determined on both architectural and size-related grounds, with hilltop towns, like Traprain Law and Eildon Hill North, described as the 'capitals of tribal groups' (Childe 1935a, 206). His 'castle' group comprised the myriad of drystone structures along the west coast of Scotland, with the broch presented as the 'culminating point in the development of the castle type' (*Ibid*, 205). Halliday & Ralston (2009, 459) have noted that by 1940 Childe had begun to use the term 'dun' for many of the smaller sites along the west coast, leading to its adoption by the RCAHMS in the 1950s.

Perhaps the most influential excavation of a large enclosed site in the mid 20th century was Peggy Piggott's investigation of Hownam Rings, one of several Roxburgh forts excavated around this time (Piggott 1948). The Hownam model, based on the results of these excavations, sought to explain the sequence of development of southern Scottish forts.

This was framed within the Hawkesian ABC Iron Age, with successive invasions the catalyst for three distinct Iron Ages representing specific groups of people. Hownam was chosen as it was seen as a typical Border fort, and Peggy and Stuart Piggott proposed a developmental sequence beginning with a phase of unenclosed settlement, followed by palisaded settlement, univallate hillfort, multivallate hillfort and unenclosed settlement with substantial stone houses (Figure 3.4). These successive phases were thought to represent specific invasions or migrations of people from the south, and were likened to an apparent trend in Wessex of univallate hillforts being abandoned in favour of multivallate sites. While the interpretive framework that inspired the Hownam model would fall out of favour with the advent of radiocarbon dating (SCARF 2012, 6), the sequence itself remained unchallenged until Peter Hill's excavations of Broxmouth in the late 1970s (P. Hill 1982).

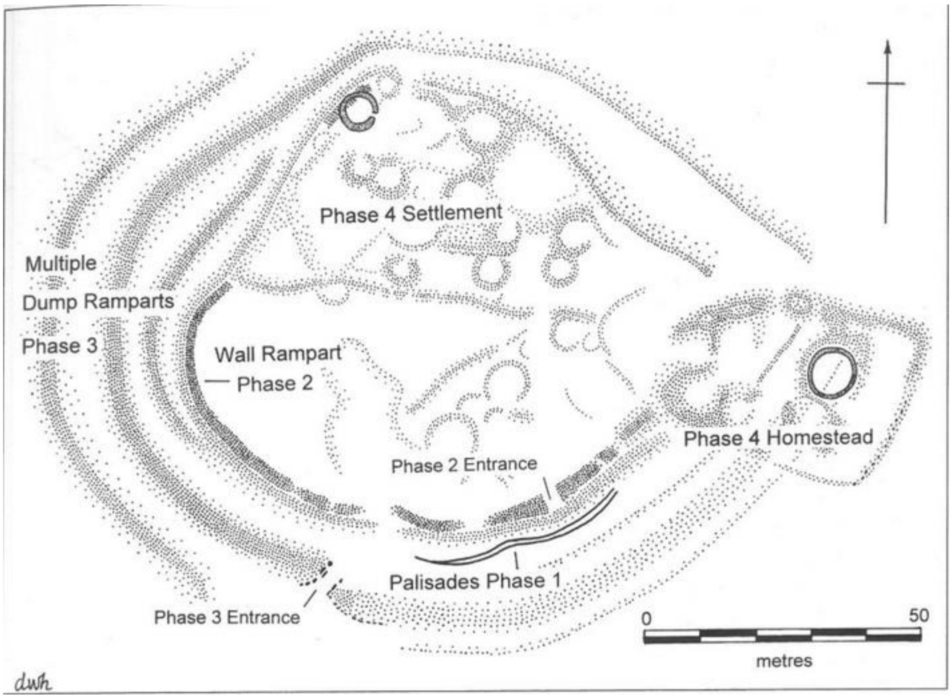

Figure 3.4: *The Hownam sequence. After Harding 2004a, 55, adapted from Piggott (1948).*

Richard Feachem's 1966 paper on northern British hillforts represents what can be seen as the culmination of the culture historical approach to understanding and interpreting the larger enclosed sites of Scotland. Feachem's work, and the comprehensive distribution map that was created from it, was based on his experiences as a Royal Commission investigator – as Halliday and Ralston (2009, 460) have noted, he 'probably saw more forts and duns than anyone before or since'. He identified specific regional types, based on subdivisions of Piggott's provinces, such as the 'small, almost sub-rectangular forts' and promontory forts of Galloway (Feachem 1966, 76), or the univallate or bivallate stone-walled circular forts of Aberdeenshire (*Ibid*, 72). Sites large enough to be *oppida*, or major tribal centres were also mapped, with a minimum size of six acres, and he attributed them to tribes documented and mapped by Ptolemy in the 2nd century BC. Hence, Walls Hill in Renfrewshire was believed to be the capital of the Damnonii, while Cnoc Araich in Kintyre was interpreted as a centre of the Epidii (*Ibid*, 77-82).

3.3 Modern investigations and dating

A growing number of settlement sites have been subject to excavation since the 1960s. Of particular note is the explosion of archaeological interest in the Western and Northern Isles from around this time, with investigations into the origins of brochs by MacKie (1965; 1971) and excavations at Bu, Gurness and Howe (Hedges et al 1987). Programmes of excavation and survey on the Uists, Lewis and Shetland began in the 1980s, with the quantities of data generated leading to significant debate on the chronology and settlement structure of the Atlantic Iron Age. The University of Edinburgh's work on the Bhaltos peninsula, coordinated by Dennis Harding, included excavations of the brochs of Dun Bharabhat and Loch na Berie and a later wheelhouse at Cnip, and was one of the first attempts to understand a Hebridean Iron Age landscape (Harding & Armit 1990; Harding & Dixon 2000). The Uists and Barra were subject to a long-running research programme coordinated by the University of Sheffield, combining field survey, excavation and palaeoenvironmental investigation (Branigan & Foster 1995; 2000).

Classification and dating of forts became a central concern. The RCAHMS had begun to use the term 'dun' to describe smaller fortified drystone sites in Atlantic Scotland that could not be ascribed to the broch category (Maxwell 1969; Halliday & Ralston 2009, 459). Leslie Alcock and Margaret Nieke argued that evidence available at the time suggested that forts in Argyll were in use in the 1st millennium BC, while the smaller duns were 1st millennium AD, and formed the main part of the settlement structure of the kingdom of Dal Riata, with the exception of a number of high status 'royal' forts mentioned in historical documents (Nieke 1984; 1990; Alcock & Alcock 1987). These 'nuclear forts', a term introduced by Stevenson (1949) to define enclosed sites with a central citadel and several lesser attached enclosures, incorporated an apparently hierarchical use of space, and were considered to be the seats of kings in the early Historic period. Dating was based on the demonstrable later 1st millennium AD chronologies of Dundurn in Perthshire (Alcock et al 1989) and Dunollie in Argyll (Alcock & Alcock 1987), along with the objects obtained from the much earlier excavations at Dunadd (Christison & Anderson 1905; Craw 1930). However, the dating of all sites conventionally classed as duns to the early Historic period has been challenged, notably by Henderson and Gilmour (2011) using excavated evidence from a curvilinear site at Loch Glashan in Mid Argyll, and reinterpretation of the chronological sequence of Kildalloig dun in Kintyre, to convincingly argue that curvilinear sites classed as duns are likely to have been constructed in the 1st millennium BC. A possible development from simple to complex roundhouses can also be seen. Conversely, most non-curvilinear or rectilinear sites, for example Kildonan Bay and Dun Fhinn in Kintyre, are likely to be much later in date, and may be the Dalriadic homesteads of Alcock and Nieke (Fairhurst 1939; Gilmour 2000a, 130; Henderson & Gilmour 2011, 95).

Figure 3.5: *The excavations at Broxmouth, East Lothian. ©RCAHMS.*

Radiocarbon dates from excavated forts throughout Scotland, like Broxmouth (Armit & McKenzie 2013), Balloch Hill in Kintyre (Peltenburg 1982), Eilean an Duin in Craignish (Nieke & Boyd 1987), and the Brown Catherthun in Angus (Dunwell & Strachan 2007) do suggest that many, perhaps most, were occupied in the mid 1st millennium BC. In East Lothian and the Borders there is evidence for abandonment of enclosed sites in the later 1st millennium BC to be replaced by unenclosed settlement (Armit & Ralston 2003, 176-7). The excavations at the multivallate fort of Broxmouth on the East Lothian plain can be considered to be the most significant to date in charting the development and dating of a hillfort through time. Originally excavated by Peter Hill in the late 1970s (P. Hill 1982), the results have only recently been fully published in a major monograph (Armit & McKenzie 2014). Broxmouth is rare among British hillforts in how completely it was excavated (Figure 3.5), and the results have allowed archaeologists to trace the changes that occurred at the site over time. The phasing at Broxmouth shows no straightforward transition from univallate to multivallate defences, contrary to the Hownam model (*Ibid*, 17-19). Bayesian modelling of the large number of well stratified radiocarbon dates at the site has allowed accurate dating of each phase, from an early Iron Age palisaded settlement (within the date range 640-430BC), through successive phases of hillfort building, expansion and contraction (490-210BC), a post hillfort settlement and cemetery (235-60BC) and a final series of substantial stone and timber-built roundhouses (between 100BC–210AD). A particular theme emerging from the Broxmouth excavations was the importance of modern activity in the creation or destruction of the archaeological record – taphonomic processes, notably modern ploughing, destroyed much of the occupation evidence for all phases in most of the interior. It was only in protected natural hollows or areas protected by major later deposits that archaeological deposits remained, particularly those related to earlier phases of activity, while only negative features survived across the less badly ploughed south and west parts of the interior (*Ibid*, 19-20). Despite this, the surviving evidence from Broxmouth is exceptional. It shows that some hillforts were intensively and densely occupied over many centuries, and that the communities that occupied them were constantly changing and modifying the nature of that settlement. It also reminds us that absence of settlement evidence in the interior of a fort does not mean that it was not once a domestic site - anthropomorphic activity and natural processes like soil erosion have a huge impact on the survival of occupation deposits. Furthermore, the similarity of Broxmouth to many other sites in south east Scotland, like Sherrifside or White Castle, suggests that in this part of Scotland many communities lived in structures that we might call hillforts for many generations (*Ibid*, 480). The presence of the nearby palisaded settlement at Dryburn Bridge, a site whose dating and nature are very similar to Broxmouth's earliest phases (Dunwell 2007), may support the evidence from Broxmouth that sites of that type may have pre-dated many of the hillforts in East Lothian. This may not be the case in other parts of Scotland, however, where palisaded enclosures have been dated from the later Bronze Age to the early Historic period (Armit & Ralston 2003, 177).

The mid to later 1st millennium BC dating of hillforts, as seen at Broxmouth, Balloch Hill and Brown Caterthun is far from universal. Traprain Law in East Lothian has produced evidence for late Bronze Age and Roman period occupation, but little indication that it was inhabited in the Iron Age (Hunter 2000; 2001; Armit & Ralston 2003, 179; Armit et al 2005;). Eildon Hill North, in Roxburghshire, produced similar dates, with radiocarbon dating and artefacts recovered suggesting Bronze Age and early 1st millennium AD use of the site, albeit excavations have not approached the scale of Broxmouth (Owen 1987). These sites are among the largest forts in Scotland, mentioned as hilltop towns by Childe (1935a) and minor oppida by Feachem (1966), and their dating has contributed to hypotheses that others like Dunagoil, on Bute, and Ben Griam Beg in Sutherland may also be late Bronze Age (Harding 2004a, 141; Ralston 2006, 172-3; SCARF 2012, 78). Excavations by Jobey at another large fort, Burnswark in Dumfriesshire, yielded two radiocarbon dates that suggested construction of the rampart at around 500BC, albeit there is evidence for late Bronze Age settlement of the hill, and Roman period domestic occupation, along with an Antonine period fortlet and two nearby Roman military camps (Jobey 1978).

Figure 3.6: *A footprint carved into rock in Dunadd's interior, taken from the innermost 'citadel' enclosure.*

To further complicate matters, many forts in Scotland were constructed and occupied in the mid to late 1st millennium AD. Dunadd in Mid Argyll was again excavated in the 1980s, revealing an assemblage of rare quality, including prestige metal objects, imported continental pottery and metalworking debris (Lane & Campbell 2000). Early Historic period occupation began around 500AD and continued for several centuries, with successive phases of rampart construction eventually turning it into what Stevenson (1949) or Alcock would have defined as a nuclear fort (Alcock & Alcock 1987; Alcock et al 1989), and it is conventionally believed that it was a major centre of the Dál Riata, and perhaps where their kings were crowned (Figure 3.6; Skene 1876; Christison 1905; Lane & Campbell 2000, 247-9; 258-61). Trusty's Hill and the Mote of Mark in Galloway also produced similar assemblages and dating, albeit on a smaller scale (Laing & Longley 2006; Toolis & Bowles 2013). There was, however, Iron Age occupation of the hilltops at Dunadd and Trusty's Hill, and the early 20th century excavator of the Mote of Mark believed that the same was true there (Curle 1914), to be contradicted by Laing and Longley who investigated the site in the 1970s (Laing 1975, 98-102). Thus, there is evidence that reoccupation of locations fortified in prehistory was occurring in the middle of the 1st millennium AD. Many other forts throughout Scotland have been dated to the early Historic period, such as Dundurn in Perthshire (Alcock *et al* 1989), Dunollie in Argyll (Alcock & Alcock 1987), the promontory fort of Burghead in Moray (Small 1969) and the promontory fort of Green Castle in Banffshire (Ralston 1980). Recently Murray Cook has led a series of small-scale excavations of forts throughout eastern Scotland designed to date a large number of sites (Cook 2011). Several enclosed sites in Aberdeenshire – Maiden Castle, Hill of Barra, Barflat and Cairnmore –produced mid 1st millennium AD dates. However several others – Bruce's Camp, Dunideer and Hill of Newleslie – were occupied in the Iron Age. Two radiocarbon dates from a watching brief carried out on Mither Tap of Bennachie, also in Aberdeenshire, similarly produced mid 1st millennium AD dates.

While much work has been done, then, on the chronologies of the larger enclosed sites of Scotland since absolute dating was first used, large-scale survey work has remained mostly the preserve of the RCAHMS. Inventories for much of Scotland had been completed by 1992, with the final volume on Mid Argyll, and remain the major source for distributions of archaeological sites in most regions. At around this time there was a shift in emphasis from planning and recording sites to investigating archaeological landscapes. Halliday and Stevenson (1991, 129-30) have pointed out the difference in scale between maps and plans in the final Argyll Inventories and a subsequent survey of north east Perthshire (RCAHMS 1994), with the former concentrated on plans of monuments, and the latter illustrated primarily with maps of the archaeology situated within the wider landscape. Aerial survey has been an integral part of this change in emphasis, and it has played an increasingly useful role in identifying sites in more intensively farmed regions, with cropmark and soilmark data greatly expanding the corpus of known enclosed sites throughout Scotland (e.g. Cowley & Brophy 2001). Recent regional surveys, such as those carried out in Perthshire (1994) and Eastern Dumfriesshire (1997) have integrated that data into comprehensive analyses of those areas. The latter, in particular, has shown the great increase of known settlement density that can occur due to analysis of cropmark data in suitable landscapes, such as the arable land of Eastern Dumfriesshire.

3.4 Classifying enclosed sites in western Scotland

David Christison, and subsequently Frederick Coles, in their surveys of various parts of Scotland subdivided fortified sites by the primary material used in the construction of their defences, and by the condition that they survived in. For his Peebleshire survey, Christison (1887) devised six classes, A to F, that were essentially a commentary on what was visible on the ground, with no implication that each class had a different function or association with a particular group of people. Coles, in Kirkcudbrightshire, distinguished between 'forts', 'motes' and 'doons', although the reasoning behind this classification, described by Coles as 'structural' was not clearly stated (Coles 1891, 355). Later, Christison's synthesis of fortified sites in Scotland included subdivisions based on size, using the longest measurable dimension of each site to chart and compare patterns in site size in various parts of Scotland (Christison 1898, 385). The defensive nature of all enclosed sites was, at this time, assumed. In many of the earliest Royal Commission Inventories, the only prehistoric settlement remains included were listed under 'defensive constructions', and grouped together as 'forts' (RCAHMS 1909; 1912; 1914). An attempt was made to subdivide the defensive constructions category, but the subdivisions were specific to each Inventory. Thus, the Berwickshire inventory (1909) divided forts geographically, while Wigtownshire (1912) and Kirkcudbrightshire (1914) used aspects of their architecture or situation. The classification of forts into 'promontory forts, hill forts, forts of regular geometrical form, small defensive enclosures, possibly of a domestic character, broch-like structures, and mote-hills' in Galloway (1912, xxviii-xxxvi; 1914, xxxiv-xl) is inconsistent in the criteria it uses, variously using, and not using, size, landscape position and subjective assessments of site function. It is indicative of a move away from the scientific techniques of Christison to incorporating more interpretation within classifications.

In Atlantic Scotland the term 'broch' had been used for centuries to describe the tall circular stone towers with hollow, galleried walls that were a distinctive feature of the Western and Northern Isles, and Skye (e.g Anderson 1883; for a summary see Romankiewicz 2011, 15). Christison recognised them as distinct from other fortified sites, albeit still within an overall group of 'stone forts of dry masonry' (Christison 1891, 117-8). He divided the enclosed sites of Argyll and Atlantic Scotland into three classes – brochs, which were 'well-defined in form', structures that may have been brochs, and stone forts of a larger size, including most of the small enclosures that would later be called duns by Childe (1935a), Maxwell (1969) and the RCAHMS. He acknowledged that the third category varied very much in size and form and could be subdivided. Furthermore it was, he argued, 'the largest and most important class of the three' and 'in competition' with the brochs throughout the Highlands (Christison 1891, 117-8), the suggestion being that brochs and stone forts were structures of similar function, perhaps indicative of different, competing groups. The Sutherland Inventory distinguished between brochs, to which it gave an admitted priority, and 'remaining defensive constructions' which included promontory forts, hill forts and 'small constructions, circular and otherwise of a defensive character' (RCAHMS 1911a, xviii-xxiv), with the Caithness Inventory having the same classificatory system (RCAHMS 1911b). This had changed by the time of the Outer Hebrides and Skye Inventory (1928), with the introduction of the Gaelic-derived term 'dun'. The new terminology marks something of a changing of the guard in RCAHMS survey, with Alexander Curle responsible for almost all the earlier site visits, while J. G. Callander had now taken over. The 1928 Inventory distinguished between brochs and 'galleried duns' which were architecturally similar but not regularly circular in shape and 'having in all probability been lower [than brochs] when intact' (RCAHMS 1928, xxxv-xl). Sites that are not dissimilar in size and construction to 'hill forts' elsewhere were listed under the heading of 'dun', like Dun Skudiburgh, Dun Cruinn or Dun Mor on Skye.

Childe grouped the stone-built structures along the west coast into his category of 'castles' with brochs seen as the most developed type within that group (Childe 1935a, 197-206). He viewed them as a specific type that subsequently spread eastward to the Northern Isles and Caithness, and of the enclosed sites of western Scotland only vitrified structures and the fort of Drumadoon on Arran were placed by him in other categories – the latter was considered large enough to be a 'hilltop town' (*Ibid*, 195-7; 206). Childe's categories were representative of an attempt to ascribe classes of site to specific cultural groups. His 'Gallic fort' category, distinguished by timber-framed *murus gallicus* ramparts at sites like Castle Law Forgandenny and Castle Law Abernethy in Perthshire, was believed to provide evidence for invaders from Gaul. Similarly, vitrified forts were attributed to migrants crossing the North Sea from the European mainland. By 1940, however, Childe had begun to differentiate between site types, other than brochs, within his castle class, and was using the term 'dun' to apply not merely to all fortified sites on the west coast, but to a more restricted group of sites (Halliday & Ralston 2009, 459). This influenced the use of 'dun', starting with Richard Feachem in the 1950s, to define the small stone-built fortified sites that did not fit the 'broch' ideal but were considered small enough to 'hold only a single family group' (RCAHMS 1971, 18; Maxwell 1969; Halliday & Ralston 2009, 459).

The present distinction between duns and forts in Argyll was adopted for the first Inventory of that region in 1971. All enclosed sites smaller than 375 m^2 in area (4000 sq. ft.) were classed as duns while the fort category was defined as anything larger than that, regardless of architecture or landscape position. Forts were considered to be 'large enough to have served the needs of small communities' (RCAHMS 1971, 16), while the dividing line was essentially an arbitrary boundary, indicative of an attempt to make classifications more empirical and scientific, without implying division in function. The fort category included sites as diverse as Creag a'Chapuill, a 4 ha hilltop enclosure in Mid Argyll, Sron Uamha, a 0.03 ha multivallate promontory enclosure at the Mull of Kintyre and Eilean an Duin in Craignish, a 0.14 ha island enclosure. Similarly, the dun class comprised monuments of many different shapes, some of which were circular and of roofable size (Harding 1984), while others were bigger and/or irregular in shape. Brochs were still differentiated, not by a particular measurable characteristic, but by corresponding to a broch ideal – regular circularity, massive galleried walls and complex architecture (RCAHMS 1980, 21).

Outside Argyll, the Roxburghshire Inventory (1956) was the first to distinguish between forts and 'settlements', a necessity given the many ephemeral enclosed sites identified by aerial survey that did not appear to be strongly defended enough to fit in the fort category. Forts were defined as 'enclosures of dry-walling or earthwork, sited defensively, and larger and with defences of a strength greater than those enclosing settlements or homesteads' (RCAHMS 1956, 16). The difference between fort and settlement was then based on subjective criteria, with the investigator's own assessment of defensibility or scale of defences the catalyst for the differentiation of monuments. Settlements were subdivided by size into 'homesteads' and 'settlements', the former large enough to contain one or two structures, while the latter could enclose many more (*Ibid*, 19). Unlike the later Argyll Inventories, no attempt was made to define a specific size distinction between fort and settlement or settlement and homestead. Classifications based on these criteria have since been adopted in south west Scotland – the terms 'enclosure', 'earthwork' and 'rampart and ditch' appear in the Marginal Lands Survey reports from Kirkcudbrightshire and Wigtownshire to define sites that were classed as forts in the Inventories carried out forty years previously (RCAHMS 1950-9; 1912; 1914). McNaughton's Fort in Nithsdale appears as a 'fort' on the 1910 OS 6-inch map, an 'earthwork' on the 1954 1:25000 series and 1956 1-inch map, and finally a 'homestead' on the 1979 1:2500 map (Figure 3.7, 3.8 & 3.9), reflecting the influence of the Berwickshire definitions, and later surveys by Jobey in Northumberland (1966) and eastern Dumfriesshire (1971) on OS site investigators. As a result, in Wigtownshire and Kirkcudbrightshire, the difference between a fort and a settlement on OS mapping and in the RCAHMS' online CANMORE database is based primarily on assessments of defensibility and size made by investigators.

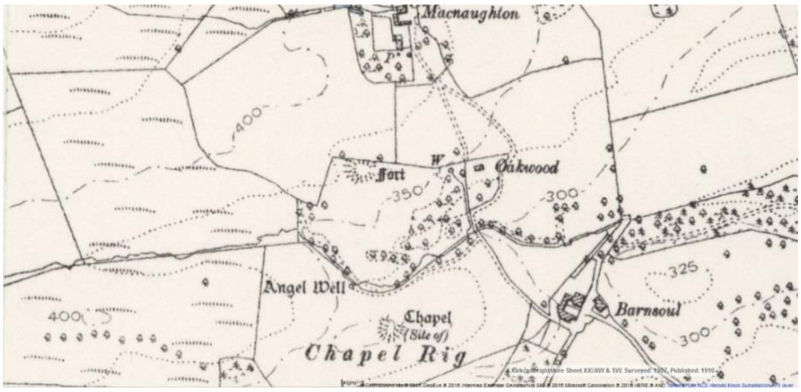

Figure 3.7: *OS 1910 6-inch map showing McNaughton's Fort as a fort. Reproduced with the permission of the National Library of Scotland.*

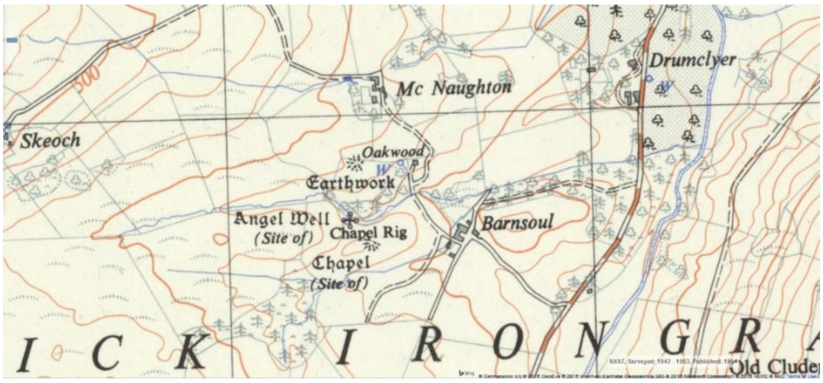

Figure 3.8: *OS 1954 1:25000 map showing McNaughton's Fort as an earthwork. Reproduced with the permission of the National Library of Scotland.*

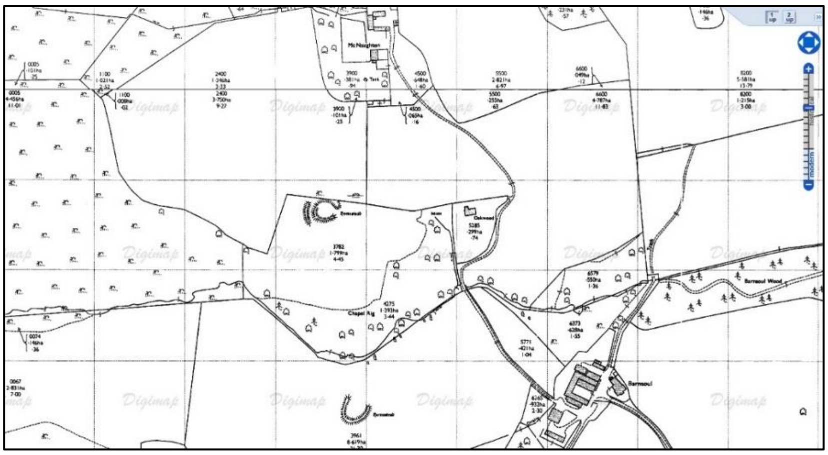

Figure 3.9: *OS 1979 1:2500 map showing McNaughton's Fort as a homestead. © Crown Copyright and Landmark Information Group Limited (2016). All rights reserved. 1979.*

The conventional classifications of enclosed sites across Scotland then are based on a history of RCAHMS and OS field survey that has its roots in the nineteenth century (Halliday & Stevenson 1991, 130). They are also uneven in nature – the criteria for a site qualifying as a fort in Argyll are different to that of eastern Dumfriesshire, for instance. The theoretical underpinnings for this unevenness lie in an assumed, *a priori*, difference in the archaeologies of different regions, based on the traditional provinces that Scotland has been divided into. These classifications have been significantly critiqued in the last thirty years (e.g. Harding 1984; 1997; 2006a; Armit 1990; Gilmour 1994; 2000a).

The problems inherent in using one catchall term to describe the varied nature of all sites below 375 m^2 in size were first highlighted by Harding (1984). The arbitrary size division between forts and duns means that enclosures that are almost identical morphologically, and presumably in conception, but lie just either side of the line, are classed as different things. Examples include Dun Breac, Ardvergnish, or the inner enclosure at Duntroon, both classed as forts, which are similar to Dunan and t-Seagain on Gigha or Ballycastle on Luing, which are both duns (Figure 3.10). If the distinction between fort and dun is so unclear, then any attempt to use those terms to try to reconstruct ancient social or political structures, such as that of Alcock (& Alcock 1987) or Nieke (1984a; 1990) equating duns with the kingdom of Dal Riata, is flawed, a problem that has been recognised by both of those authors. Also, the dividing line was not imposed universally throughout Argyll. On Islay, where investigators were having difficulty separating duns from forts on size alone, they categorised sites based on the thickness of their walls relative to overall area and regularity in shape – thus they had a pre-existing idea of what a dun should be on morphological grounds, which was not empirically defined and was subject to an archaeologist's own assessment.

Furthermore, the dun category itself comprises a great variety of structures of differing shapes and sizes. Some are roughly similar in size and shape to brochs, while others have topographically defined shapes – for example they follow the edge of a cliff or slope. Harding (1984) proposed a distinction between the smaller, more regular duns and those that were larger and variable in shape. Incorporating research that pointed to the possible total roofing of brochs, he argued that this could have been the case for the smaller, more regular duns, calling them 'dun-houses' (Figure 3.11). The larger 'dun-enclosures' were too big or irregular to completely roof and had more in common with the smaller forts (Figure 3.10; Harding 1984, 218-9). Gilmour, however, has criticised this division, because it depends, at its foundation, on unquantifiable estimates of the ability of prehistoric people to roof structures – he has made the not unreasonable argument that roofability should be the final tier in a classificatory system that is based on objectively measurable attributes (Gilmour 1994, 17-23; 2000a, 119). Instead he divided sites in categories based on shape, a complete departure from the dun, fort and broch scheme, the latter of which for him was harmful in that it did not accurately reflect the variety of site types, 'inhibiting detailed analysis of a massive archaeological resource' (2000a, 117). His system is empirical in conception, but requires a degree of subjectivity in deciding what shape category an enclosure belongs to, for example, the outermost enclosure of Balloch Hill in Kintyre has been listed by Gilmour as rectilinear (1994, 92), but it could equally be oval – the same could be said of many sites. In essence the ambiguity between shape categories is not dissimilar to the uncertainty between arbitrary size classes, albeit the morphology-based classifications are not based on a presumption that they have meaning as to site function.

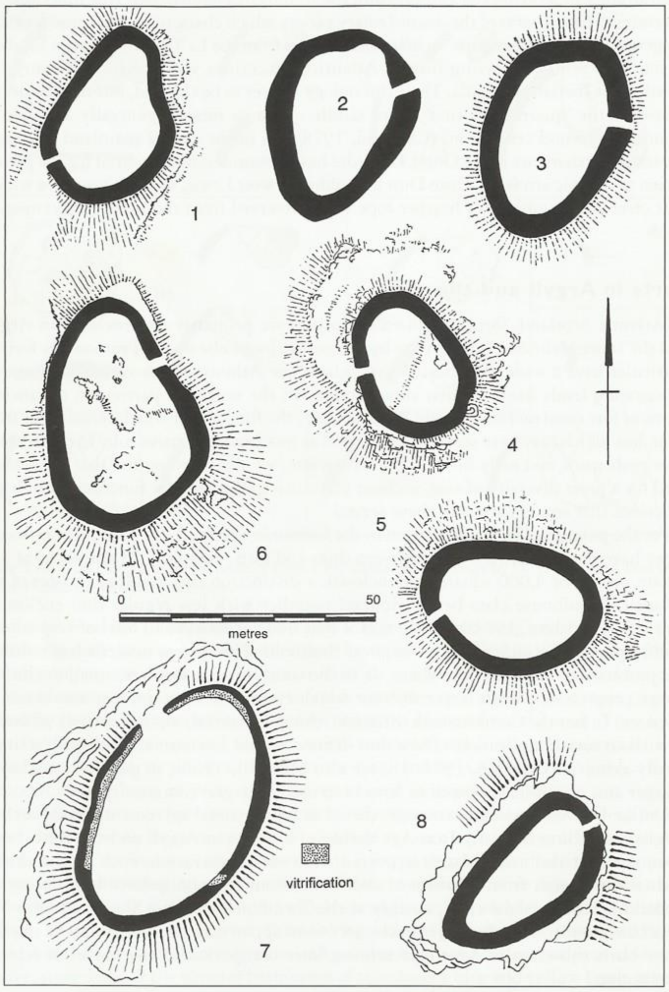

Figure 5.19 Dun enclosures and small forts in Argyll. 1, Dunan an t-Seasgain, Gigha, dun; 2, Barr Mor, Lorn, dun; 3, Ballycastle, Luing, dun; 4, Barr Iola, Cowal, dun; 5, Cnoc na Sroine, Mull, inner enclosure, dun; 6, Dun Breac, Ardvergnish, fort; 7, Duntroon, inner enclosure, fort; 8, Dunadd, summit citadel. Drawings by G. D. Thomas for the author, adapted from RCAHMS (1971), (1975), (1980), (1988).

***Figure 3.10**: Sites that straddle the fort/dun division. After Harding (2004, 138).*

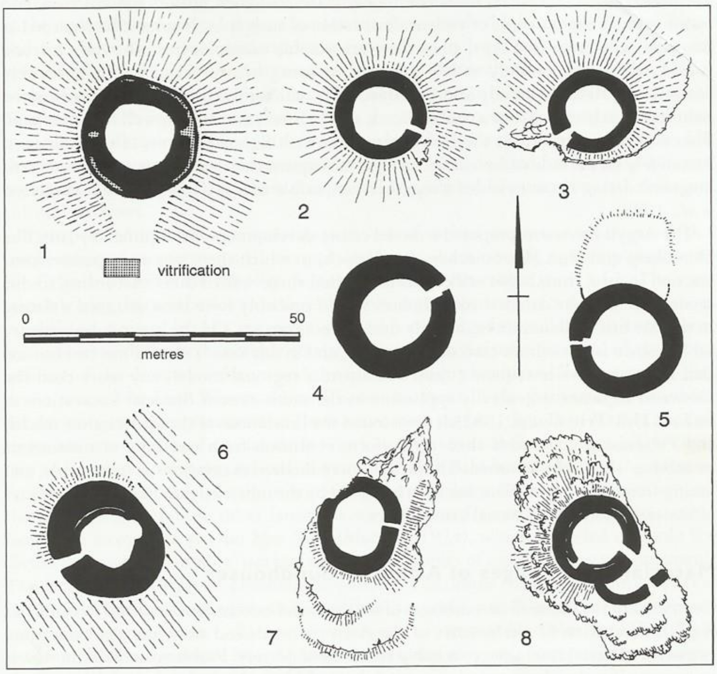

Figure 5.15 Dun houses in Argyll. 1, Rahoy, Morvern; 2, Tom a Chaisteil, Lorn; 3, Dun Leigh, Lorn; 4, Caisteal Suidhe, Cheannaidh; 5, Borgadel Water, Kintyre; 6, Dun Ballymeanoch, Mid-Argyll; 7, Cnoc a' Chaisteal, Lergychoniebeag, Mid-Argyll; 8, An Sean Dun, Mull. Drawings by G. D. Thomas for the author, adapted from RCAHMS (1971), (1974), (1980), (1988).

Figure 3.11: *Sites classed by Harding as 'dun-houses'. After Harding 2004, 131.*

The broch definition also has come under sustained attack, with demonstrated ambiguity between what was a 'galleried dun' and a broch. Irregular galleried structures had been seen by MacKie (1965) to be precursors to true brochs, but little archaeological evidence was found to support this. For Harding (1984, 206), researchers had historically tended to over-emphasise the distinction between brochs and other stone-built structures, and Hedges, in his work on Orcadian sites, believed that a rigid dividing line between brochs and duns was not useful or representative of available evidence. For him the broch was 'an artificial creation which ignores variability...[and] as a concept it has long outlived its usefulness' (Hedges *et al* 1987, 40). Ian Armit (1990; 1996) argued that even the monumental broch towers, like Bu or Dun Carloway, were part of a continuum of drystone domestic structures and 'could not be abstracted from it' (Armit 1996, 5). He introduced the term 'Atlantic roundhouse' to refer to all roughly circular structures of a roofable size, including duns and solid-walled sites. This term made sites considered as ideal examples of the broch class less distinct by placing them within a broader tradition of roundhouse building throughout Britain, and emphasised that the most important separation between site types was between those that were a house and those that were enclosures. Later, he subdivided this class into simple Atlantic roundhouses, many of which had been classed as duns, and complex Atlantic roundhouses, a sub-group that contained 'ideal' brochs, but also many structures that had been defined as 'semibrochs' or galleried duns (Armit 1996, 6-7; Romankiewicz 2011, 20).

Recently a consensus has emerged that instead of clearly definable categories, what the archaeological record reflects is a continuum of enclosed sites in terms of size and shape throughout Scotland (SCARF 2012, 74). Within this continuum there are structures that are obviously distinct from each other – i.e. Mousa broch is completely different from Eildon Hill North hillfort – but the dividing lines are so blurred that satisfactory categorisation may be impossible. The search for clarity in what defines a hillfort in Scotland may then be a lost cause given currently available data, as hypothesised by Halliday & Ralston (2009, 467) for Border enclosures. Yet it is undeniable that there are sites that did not function just as farmsteads among that continuum, and it is probable that some enclosed sites functioned as houses, while others were enclosures surrounding extensive interiors containing structures. There are divisions to be found amongst the data, that are obscured by lack of chronological information, the use of flawed classificatory systems, and the lack of a systematic landscape-based approach to identifying them. The main aim of the three case studies in this thesis, then, is to try to find and define these divisions.

4. The enclosed sites of western Scotland

4.1 Introduction

This chapter has been envisioned as a summary of available data regarding enclosed sites in western Scotland outside the three case study regions of Kintyre, Skye and Kirkcudbrightshire. Its main purpose is to provide some context for those case studies rather than serve as a comprehensive treatment of sites and their landscapes. The distribution maps below are based on a critical interpretation of past survey data. Many sites in the RCAHMS Canmore database have, for instance, been identified by an antiquarian visitor, but a subsequent OS investigator has found nothing, or they appear in the database due to historical evidence or local hearsay pointing to the presence of a fort/broch/dun in that location. These sites have been removed from distribution maps in this chapter. The Canmore ID number has been included for each site mentioned.

4.2 The Western Isles

The characteristic 1st millennium BC settlement form in the Western Isles is the complex Atlantic Roundhouse, as defined by Armit (See Armit 1992, 23 for distribution), a curvilinear drystone enclosure of potentially roofable size often incorporating galleries, hollow walls and staircases. Most of these are listed as galleried duns in the database, or possible brochs, while few sites in the Western Isles have been classed by the RCAHMS as definite brochs. Most of the latter are sites that were visited by Euan MacKie (MacKie 2007) or excavated by the University of Edinburgh in the 1980s and 1990s, such as Dun Bharabhat (*4020*; Armit 1996, 117-20) and Loch na Berie (*4100; Ibid* 120-1). The largest concentration of complex Atlantic Roundhouses is in North Uist (Figure 4.1), however, where many have conventionally been called 'island duns' (Armit 1992, 22). These structures are often located on artificial or anthropogenically altered islets in inland lochs and in some cases have not been visited since either the 1928 RCAHMS Inventory or Erskine Beveridge's surveys nearly twenty years before that (Beveridge 1911), with the exception of an Ordnance Survey investigation in the 1960s. Armit (1992) has attributed this apparent concentration on North Uist to the work of Beveridge (1911), with lack of systematic surveys on South Uist, Lewis or Harris a reason for the absence of sites in those regions. These structures are the most numerous identified later prehistoric domestic settlement type in the Outer Hebrides, but they are not hillforts. Whether complex Atlantic roundhouses are considered to be high status (e.g. Sharples & Parker Pearson 1997) or just another farmhouse (Armit 1996; 2002), they are not likely to be the 'not-farmsteads' that are the central concern of this thesis.

There are no identified upland hilltop enclosures that are likely to be of prehistoric date in the Western Isles. Armit (1992, 97-100) has identified 22 'walled islets' in inland lochs on the Uists and Lewis that are in similar locations to Atlantic roundhouses, but whose defences follow the outside of an islet that is probably too large to entirely roof. Almost all of these are conventionally classed as duns although one, Dun Toloman *(10373)* on North Uist, is actually listed as a fort. These sites are mostly ephemeral, do not enclose a large area, and rarely dominate their landscapes. Their complementary distribution to the Atlantic roundhouses on North Uist, as recognised by Armit, and their apparent preference for less fertile land (Armit 1992, 110-2), lends weight to his suggestion that they may be some kind of temporary settlement site.

There are, though, a group of promontory forts in the Western Isles, some enclosing considerable areas. Armit listed twenty in 1992 (Armit 1992, 94), although many more have emerged due to recent survey work by Chris Burgess on Lewis (Burgess 1999) and others such as Brannigan and Foster on Barra (Branigan & Foster 2000). The present distribution of these sites (Figure 4.1) is directly related to the pattern of survey, with twenty promontory enclosures identified in the Uig region of Lewis a consequence of the Uig Landscape Survey carried out in 1995 (Nesbitt et al 2011, 33-5). Many of them are simply banks or ephemeral stone walls drawn across headlands, and in a landscape of relict post medieval agricultural features it is likely that a number are not prehistoric promontory forts, and are instead much later field dykes. Some enclose massive areas – two walls cut off a promontory, which is the only access point to the island of Crois Eilean *(336026)* in eastern Lewis, enclosing an area of nearly 4 ha (Figure 4.2). Many, like enclosures at Bostadh *(335129)* on Berneray and Cadha *(270559)*, in northern Lewis cut off very large promontories of over a hectare, and some of these larger promontory sites have evidence for internal structures, possibly domestic in character, such as Gob A'Chuthail *(223931)* in the Uig region (Burgess & Gilmour 1995, 112). There are clearly many more of these sites yet to be found throughout the Western Isles, and if a substantial proportion are 1st millennium BC structures they must surely form an important part of discussions about Iron Age settlement patterns that have thus far been centred on Atlantic roundhouses.

Burgess (1999, 103) has suggested that promontory enclosures on Lewis do not form a homogeneous group, and that they probably vary greatly in date and function. Certainly the promontory fort on Mingulay (*21376*; Figure 4.3), among the southernmost of the Outer Hebrides, defies conventional attempts at ascertaining function. With an interior of nearly 9 ha, if it was a domestic settlement site the area enclosed would be completely out of proportion with the size of Mingulay itself – it seems unlikely that a community of a size that required a 9 ha living space could sustain themselves on such a small bleak island. The artificial defences consist of one stone wall, and make considerable use of the precipitous cliffs of the promontory. Plausible reasons for the existence of the site include ritual functions, or use as a refuge – no traditional military explanations or central place theories make much sense in this context due to the liminality of the location.

Only one Hebridean promontory fort has been excavated to any significant degree – Gob Eirer *(109407)* on the Uig peninsula, a fairly small univallate example (Nesbitt *et al* 2011). Four phases of activity were recognised, representing one extended period of use between 900 and 400BC, and an assemblage of locally-produced pottery and lithic artefacts was recovered. At least one structure was present in the interior, and quantities of burnt animal bone and locally grown barley suggested domestic occupation. Three hypotheses for site function were advanced by its excavators – a defended domestic structure, an industrial centre used for lithic or leather production and a religious enclosure (*Ibid*, 66-7). A considerable amount of further work is needed, then, to determine the distribution, chronological range and possible role of these promontory sites in Hebridean prehistory.

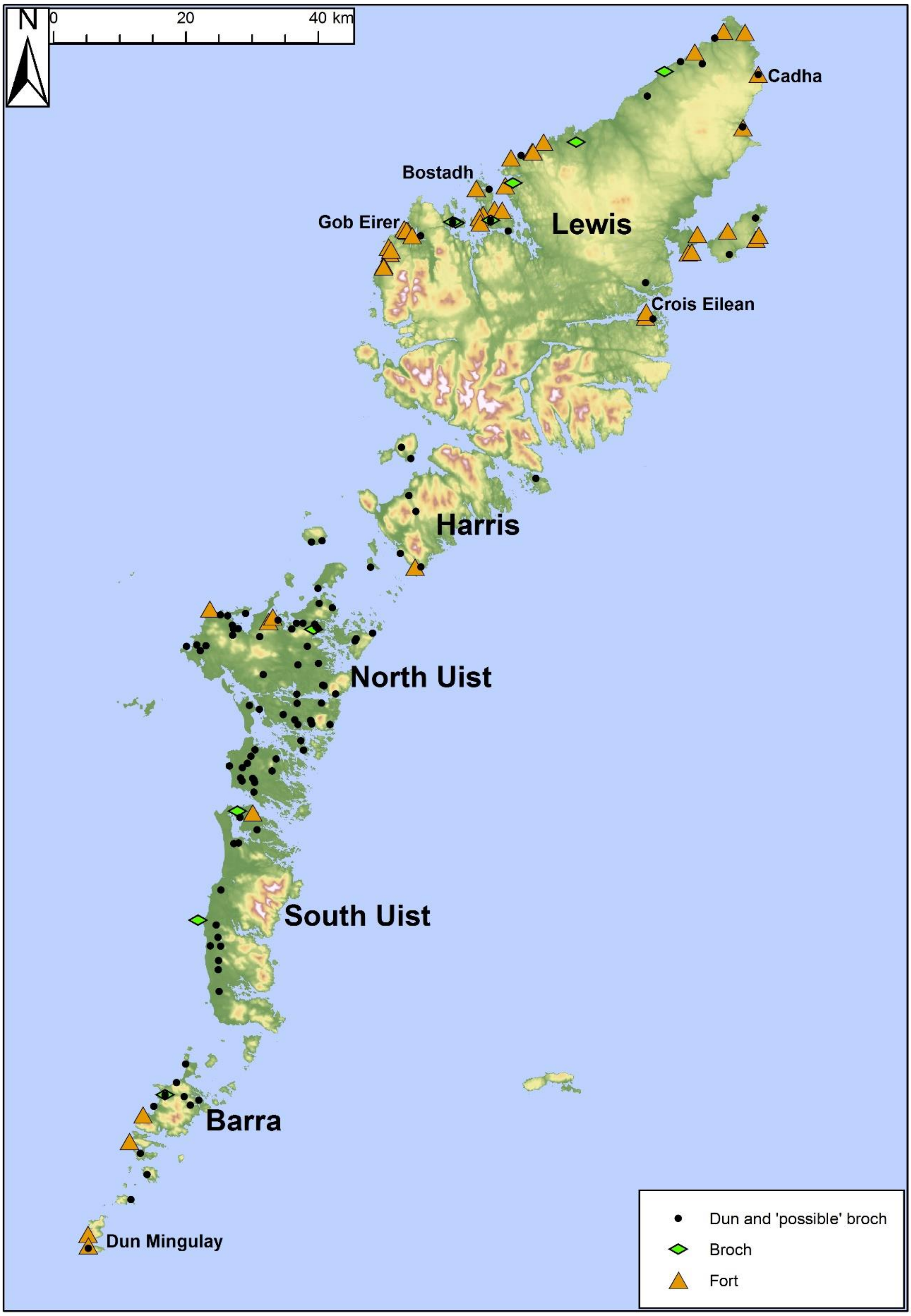

Figure 4.1: *Distribution of enclosed sites in Western Isles. Sites are categorised by RCAHMS Canmore class.*

Figure 4.2: *Promontory fort of Eilean Chalium Cille on Lewis, cutting off entire island of Crois Eilean, enclosing nearly 4 ha.*

Figure 4.3: *Promontory fort of Dun Mingulay. Showing size comparison between the site, enclosing 9 ha, and the entire island of Mingulay.*

4.3 The North West mainland, including western Sutherland and Wester Ross

The North West coast of the Scottish mainland, from Lochalsh north to Cape Wrath is among the most unexplored parts of the country in terms of archaeological survey. Most of this region has not been the subject of a Royal Commission Inventory, while the only portion that has – the northernmost parishes of Eddrachillis, Assynt and Durness – has not been surveyed since the Sutherland Inventory of 1911. Thus, the distribution of enclosed sites in this extensive region is very sparse indeed, with only seven probable forts listed (Figure 4.4). Dun Canna *(4530)*, a substantial 0.4 ha promontory fort, was surveyed by Charles Calder and Kenneth Steer in 1947, along with Dun Laigaidh *(12142)*, a complex Atlantic roundhouse overlying a vitrified enclosure, classed as a fort (Calder & Steer 1951). The former was interpreted as comprising a 'citadel' or inner enclosure and a lower, larger annexe, and the walls of both citadel and annexe are massive in construction. The fort phase of Dun Laigaidh, enclosing a smaller area than Dun Canna, was dated to the Late Bronze Age by Euan Mackie in excavations in 1967 and 1968, although much of the dating rests on its stratigraphic relationship to the more securely dated later, middle Iron Age, Atlantic roundhouse, with only one radiocarbon date from the fort phase conclusively Bronze Age (MacKie 2007; 763-6). No finds, other than one ambiguous bronze artefact were associated with the earlier enclosure.

Many sites currently classed as duns along this coast are enclosures, rather than 'dun-houses' of roofable size as defined by Harding (1984, also see Chapter 3.4). 'An Dun', Gairloch *(11959)*, for instance, is a small promontory enclosure, and sites such as Loch Thurnaig *(11985)* and Brae of Achnahaird *(4489)* may be monumental roundhouses situated within promontory forts. Only Dun Canna and Dun Ban *(11624)*, a vitrified cliff-edge site near Glenelg, enclose substantial areas – both are around 0.4 ha in size – with the remainder of enclosures in this region below 0.1 ha in size. Most sites are located on the coasts of sea lochs, for instance Loch Alsh and Loch Broom, and many are close to modern day towns and larger villages, particularly Ullapool and Kyle of Lochalsh. Perhaps their distribution is indicative of modern population centres having been favourable locations for settlement in prehistory, but it also may be a result of sites being more likely to be recognised where there are customarily more people to see them. It is unknown then, whether the pattern of small enclosures situated in clusters along the north west coast (see Figure 4.4) represents an original settlement distribution. It is certainly likely, given the lack of systematic survey, that the present dataset represents only a small fraction of prehistoric enclosed sites.

Figure 4.4: *Distribution of enclosed sites along the north west coast of Scotland. Sites are categorised by RCAHMS Canmore class.*

4.4 Northern Argyll, Lochaber and the Small Isles

4.4.1 Small Isles

The Small Isles are comparatively well populated with coastal promontory enclosures of a diverse nature, the majority on Eigg and Canna (Figure 4.6). Most cut off areas of less than 0.1 ha, with one exception – Dun Teadh *(10738)* on Canna, which has a massive wall and ditch stretching across the neck of a promontory that measures over 0.7 ha Some, like Dun Channa *(10764)*, occupy precipitous coastal stacks with no easy access, and most have visible structures in their interiors, examples being Shellesder *(10995)* on Rhum, Dun Channa, Sean Dun *(10741)* on Sanday, Caisteal an Duin Bhain *(22137)* on Muck, as well as Kildonnan *(22177)* and Poll Duchaill *(202968)* on Eigg. The presence of these structures, including at least eight hut platforms crammed into the small interior of Poll Duchaill, and the excellent level of preservation at many sites make the promontory forts of the Small Isles good targets for further investigation into the character, function and dating of Atlantic promontory forts. The most exceptional site, however, is an inland promontory fort formed by a wall drawn across the only access to the summit of An Sgurr, the 380 m altitude pitchstone ridge that dominates the interior of Eigg (Figure 4.5; *22190*). A 5.5 ha stretch of uneven rocky interior is enclosed, making it the largest enclosed site along the west coast north of Mid Argyll, outside of the Outer Hebrides. It is difficult to imagine it being a place of permanent occupation, and if prehistoric, use as a refuge seems possible, along with potential religious or ceremonial functions.

Figure 4.5: *An Sgurr dominating the landscape of Eigg. ©RCAHMS.*

4.4.2 Lochaber

At least seven of the nineteen enclosed sites classed as forts in the former local government district of Lochaber (excluding the Small Isles; Figure 4.6) are vitrified. Most are relatively small in the areas that they enclose, and some are complex in nature. The Torr, Shielfoot *(22514)* is a very narrow and prominent vitrified ridge fort with outer defences and an internal Atlantic roundhouse. Harding (1997, 121) has mentioned the site as one that was likely positioned solely for effective defence, as the interior is so cramped that the potential living area is tiny compared to the labour required to build the defences. Dun Deardail *(23727)*, a small vitrified enclosure on a precipitous knoll on the western slopes of Glen Nevis, is one of the highest forts in western Scotland in terms of altitude (347 m OD). It has been subject to considerable archaeological attention over the last century, perhaps because of its location in the shadows of Ben Nevis, and Christison surveyed and planned it in 1888 (Christison 1889). The fort is currently (2015-2017) being excavated by the Nevis Landscape Partnership Project and AOC Archaeology Group, and the results from that investigation - the first major excavation of a western Scottish fort in some time - will be of considerable significance (*AOC Archaeology Group* n.d.).

Three enclosed sites from this region have previously been excavated, two Atlantic roundhouses – Rahoy *(22470)* and Caisteal Breac *(22503)* – and one slightly larger enclosure, Torr an Duin *(23336)* on the shore of Loch Nan Gabhar. The excavation of Torr an Duin, a small, vitrified univallate fort, was carried out over a century ago and little evidence relating to function or date were uncovered (Reid 1909). Similarly Caisteal Breac was excavated in the 1960s, but nothing was found and the results were not published. The vitrified site of Rahoy, however, has become the type-site for solid-walled circular Atlantic roundhouses in Argyll. Excavated by Childe and Thorneycroft in the 1930s, it is still one of very few circular structures of roofable size that have been investigated (Childe & Thorneycroft 1938). Dated to the earlier Iron Age due to the presence of saddle querns, an early Iron Age brooch and a socketed iron axe head, Rahoy was identified as an outlier by Alcock and Alcock (1987, 131), and Nieke (1990, 133) in their dating of duns to the early Historic period. More recently Harding (1997, 123), and Henderson and Gilmour (2011, 92-9), have suggested that it is likely to be representative of most small circular drystone structures in Argyll, with recently excavated sites such as Dun Glashan in Mid Argyll supporting this dating.

No enclosed site in this region exceeds 0.3 ha in size and most have interiors that are smaller than 0.1 ha. Few are topographically prominent – The Torr and Dun Deardail are exceptions in this regard – and most are situated in coastal locations, on the shores of sea lochs like Loch Sunart or Loch Linnhe. Enclosed settlement evidence is, for the most part, widely spread out, with few concentrated clusters of sites, perhaps due to the generally poor quality of farming land in this region, and the inhospitable nature of its inland topography.

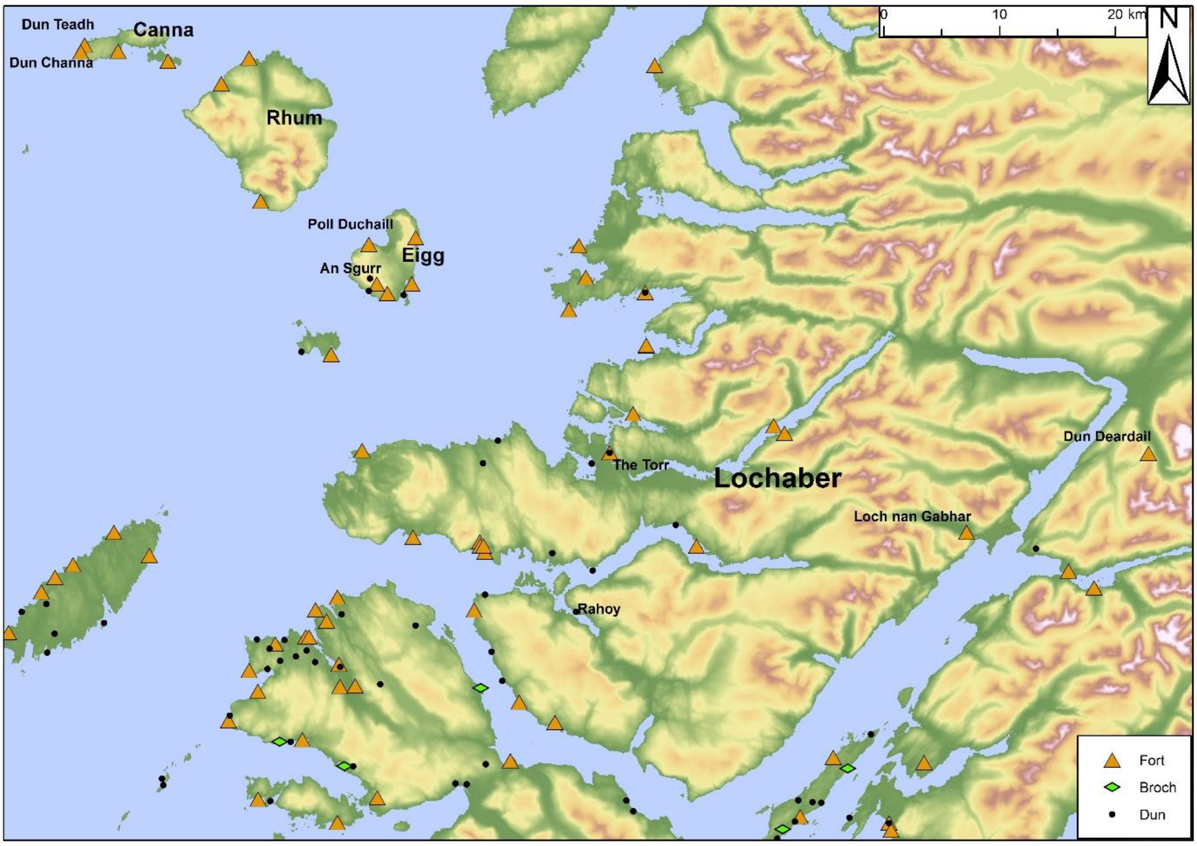

Figure 4.6*: Distribution of enclosed sites in Lochaber and the Small Isles. Sites are categorised by RCAHMS Canmore class.*

4.4.3 Mull, Coll, Tiree and Iona

There are large concentrations of enclosed sites on Coll and Tiree (Figure 4.7) probably due to the low-lying nature of both, and the fertility of the latter. Many sites classed as duns are present on Tiree, the majority of which are circular or oval. There are at least two complex Atlantic roundhouses, one of which, Dun Mor Vaul *(21524)*, has been thoroughly excavated by MacKie. It was crucial to his dating of Argyll brochs to the 1st century BC or later, an assertion that has since been strongly challenged on methodological and interpretive grounds (MacKie 1974; Harding 1997, 133-6). Crannogs are also present in considerable numbers, with six known examples on Coll, and four on Tiree. The density of the Atlantic roundhouse distribution on Tiree has been noted as unusual by Gilmour, compared to Coll, where enclosed sites tend to be rectilinear, irregular or promontory enclosures (Gilmour 1994, 45).

The larger enclosures classed as forts on these islands have suffered from comparative lack of investigation, the main sources of information being Beveridge, who visited many, and RCAHMS investigators, who surveyed most while compiling the third Argyll Inventory (Beveridge 1903; RCAHMS 1980). The majority are small promontory enclosures, or are situated on craggy coastal knolls – none enclose areas larger than 0.3 ha and none are at altitudes above 30 m OD. Many have been described by RCAHMS investigators as occupying very strong defensive positions, for example Dun Nan Gall *(21483)* and Dun na Cleite *(21412)* on Tiree (RCAHMS 1980, 80-2). In size and landscape position they appear quite similar to promontory sites on the Small Isles, although the examples on Coll and Tiree are generally in a poorer state of preservation.

On Mull there are two primary concentrations of enclosed sites (Figure 4.7). The first is on the Mornish and Quinish peninsulas in the far north west of the island, an area with one of the few large concentrations of fertile land on Mull. Indeed, sites classed as duns are remarkably evenly spread across Mornish, and form a grouping of mostly circular structures also identified by Gilmour (2000, 141) that is perhaps suggestive of a pattern of regularly dispersed farming settlements, each responsible for a similarly-sized piece of land. The larger enclosures in this part of Mull are primarily coastally located. Creag A'Chaisteal *(21785)*, a 0.2 ha promontory fort was excavated in the 1960s, with evidence for at least one timber roundhouse in the interior, and possibly more (RCAHMS 1980, 74). The exceptions to this seaward distribution are two oval forts of between 0.1 ha and 0.2 ha almost two kilometres inland, Torr A'Chlachain *(22097)* and Tor Aint *(22118)*, and it is perhaps unsurprising that the only substantial inland enclosures on Mull are in the region with the largest area of favourable farming land on the island. A cautionary note to simplistic equation of settlement patterns with farming land, however, is the relative absence of sites along the north east coast of Mull, where there are (at least today) numerous glens that are fertile, compared to most of the island. Also there is only one enclosed site close to an area of agriculturally productive glacial drifts in the far south east of the island often called the Garden of Mull, between Loch Spelve and Loch Buie (RCAHMS 1980, 3).

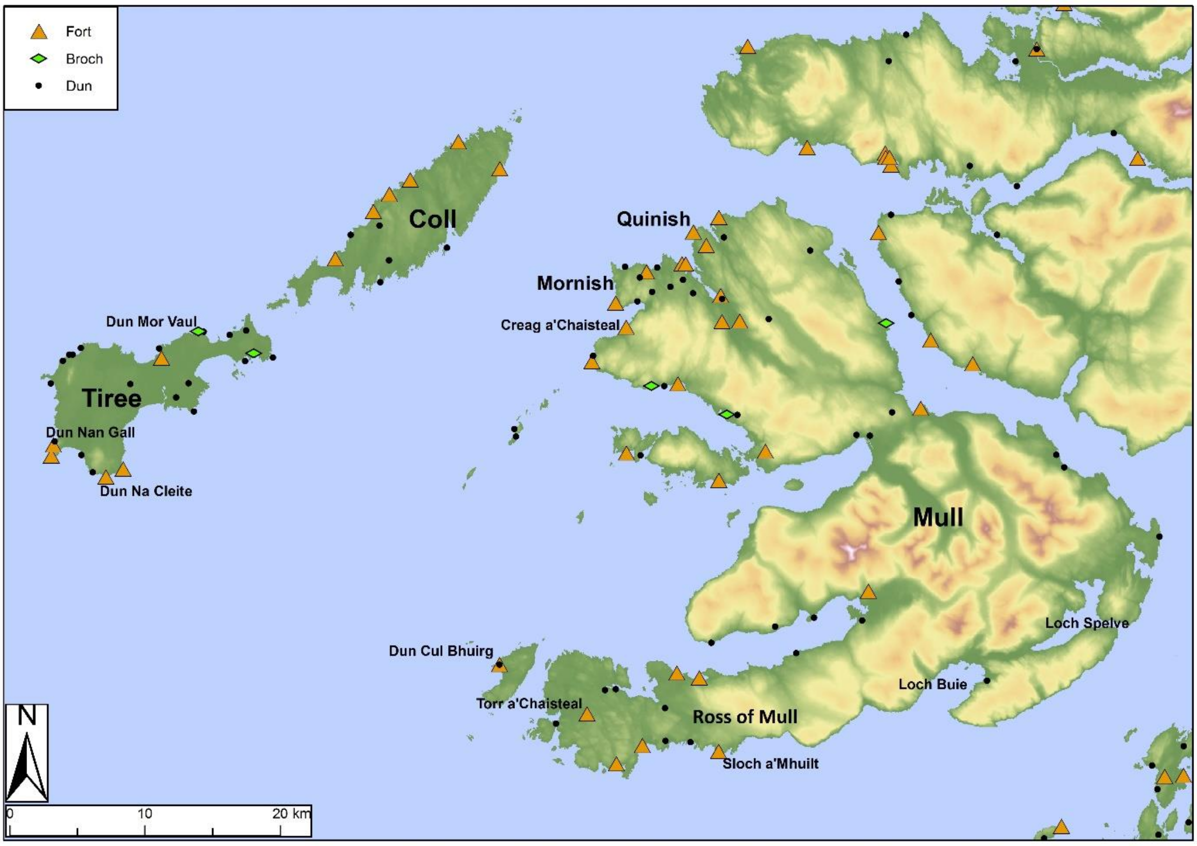

Figure 4.7: *Distribution of enclosed sites in Mull, Coll, Iona and Tiree. Sites are categorised by RCAHMS Canmore class.*

The second major cluster of enclosed sites is on the Ross of Mull, in the far south west, the largest area of low-lying ground on the island. Here there are some larger enclosures, with the coastal promontory fort of Sloc A'Mhuilt *(21978)* enclosing a rocky, inhospitable interior of 0.75 ha, only a small portion of which was likely habitable. Most of these promontory enclosures are in particularly poor condition, and interiors are today largely featureless. The one inland fort, Torr A'Chaisteal *(21768)* follows this pattern, in that it is a badly preserved promontory site of considerable defensive strength with little topographic or visual prominence in the surrounding region. The sites classed as duns in this part of Mull are diverse, mainly oval in shape, but with a galleried rectangular example, Dun A'Gheird *(21974)*, and some have outworks, e.g. Torr A'Chaisteil dun *(21774)*. A tiny irregular dun, An Caisteal *(21757)*, was excavated in the 1960s, revealing revetted walls and a small domestic assemblage, including pottery and part of a rotary quern (Fairhurst 1964).

On Iona, to the west, there is one known enclosed site, Dun Cul Bhuirg *(21638)*, an irregularly-shaped fort of approximately 0.1 ha on a comparatively prominent knoll on the west of the island (Figure 4.8). It was excavated by MacKie in the 1960s, revealing a large pottery assemblage, interpreted by the excavator as suggestive of occupation at around the same time as Dun Mor Vaul on Tiree, that is approximately the first century BC to the first couple of centuries AD (MacKie 2007).

Figure 4.8: *The position and setting of Dun Cul Bhuirg on Iona. ©RCAHMS.*

4.4.4 Lorn

Sites classed as forts in northern Argyll have been described by the RCAHMS (1975, 16) as 'remarkably homogeneous', being small (less than 0.1 ha) and univallate. In Lorn, however, in contrast to the coast and islands further north and west, there are some large inland enclosures. Dun Ormidale (*22942*; Figure 4.9) encloses an area of over 3 ha and has been cautiously proposed as a possible *minor oppidum* (RCAHMS 1975, 70). Its landscape position, however, is not especially topographically prominent. It is overlooked by higher ground 200 m to the north east and visibility from its location is directed seaward into the Firth of Lorn, although it is exceptionally visually prominent from that direction. Its most substantial defences are to the north, towards the direction of easiest approach, while steep slopes cut off the southern and western sides.

The second large enclosed site is more complex in nature. Dun Mac Sniachan *(23234)* occupies a knife-shaped ridge of land overlooking Ardmucknish Bay, and has been interpreted as comprising three consecutive enclosures of different dates – two forts with vitrified ramparts and a presumably later dun of roofable size (RCAHMS 1975, 69-70). An excavation carried out in the 19th century unearthed several metal objects consistent with an Iron Age dating that appeared to be from the second of the three enclosures, although it is not certain exactly where the excavation trenches were placed (Smith 1875). The largest, and possibly earliest of the three enclosures at Dun Mac Sniachan surrounds a 0.6 ha interior, making it much bigger than the majority of forts in Lorn, although still one fifth the size of Dun Ormidale. Its landscape position, like Dun Ormidale's, is prominent in a seaward direction, and it is certainly not placed in, for example, a strong position to 'guard' against a landward approach from the east.

A third fort, Losgann Larnach *(22654)*, has been described by RCAHMS investigators as 'unrivalled within the region for its great natural strength' (RCAHMS 1975, 73). A small (0.1 ha) univallate enclosure on an easily defended steep coastal hill, it has been reported as having evidence for internal structures. Like Dun Ormidale and Dun Mac Sniachan its visual prominence is primarily seawards, with exceptional views across the Firth of Lorn.

There are many rectilinear enclosures in Lorn, as identified by Gilmour (1994, 44) almost all located coastally. Dun an Fheurain *(22954)*, one of several sub-rectangular stack sites along the coast, has been subject to excavation on at least four separate occasions from the 1880s to the 1950s, with investigation concentrated on an associated midden deposit (Ritchie 1974). Named by Alcock and Alcock (1987, 137) as 'one of the four richest assemblages from Early Historic Dal Riata', the resulting finds include samian pottery and bone objects, as well as bronze pins and a spiral finger ring. These have been taken to indicate early and mid 1st millennium AD occupation, albeit the stratigraphy of the midden and the nature of its association with the actual structure are uncertain (Ritchie 1974, 100-6).

The distribution of enclosed sites is almost overwhelmingly coastal, with an exceptionally dense concentration on Lismore island – one of the most fertile parts of northern Argyll (Figure 4.9). Two comparatively large, poorly preserved forts are present on the island *(23010 & 22949)*, together with at least six Atlantic roundhouses and several rectilinear or irregular structures (Gilmour 1994, 44). Despite this coastal distribution in Lorn, there are few promontory forts such as those on Mull, likely due to a comparative lack of suitable promontories, but a proliferation of craggy coastal knolls. Of all kinds of drystone enclosed site, small curvilinear enclosures, many of which were classed by Gilmour as Atlantic Roundhouses, are most likely to be located inland (Gilmour 1994, 43). There are several such examples on knolls spaced evenly along Glen Lonan and Glen Nant for instance, low-lying valleys of relative fertility among the moorland of inland Lorn (Figure 4.9). The positioning of these sites – on low hillocks on the valley bottom, spaced out evenly amongst the more fertile land - would suggest that they are farmsteads, and it does not contradict the structures being contemporaneously occupied. One of them has been excavated – An Dun, Glenamachrie – with a secondary, rectangular structure found in the interior, and rotary quern fragments used in the main dun wall, suggestive of domestic occupation possibly in the later Iron Age (RCAHMS 1975, 77-8).

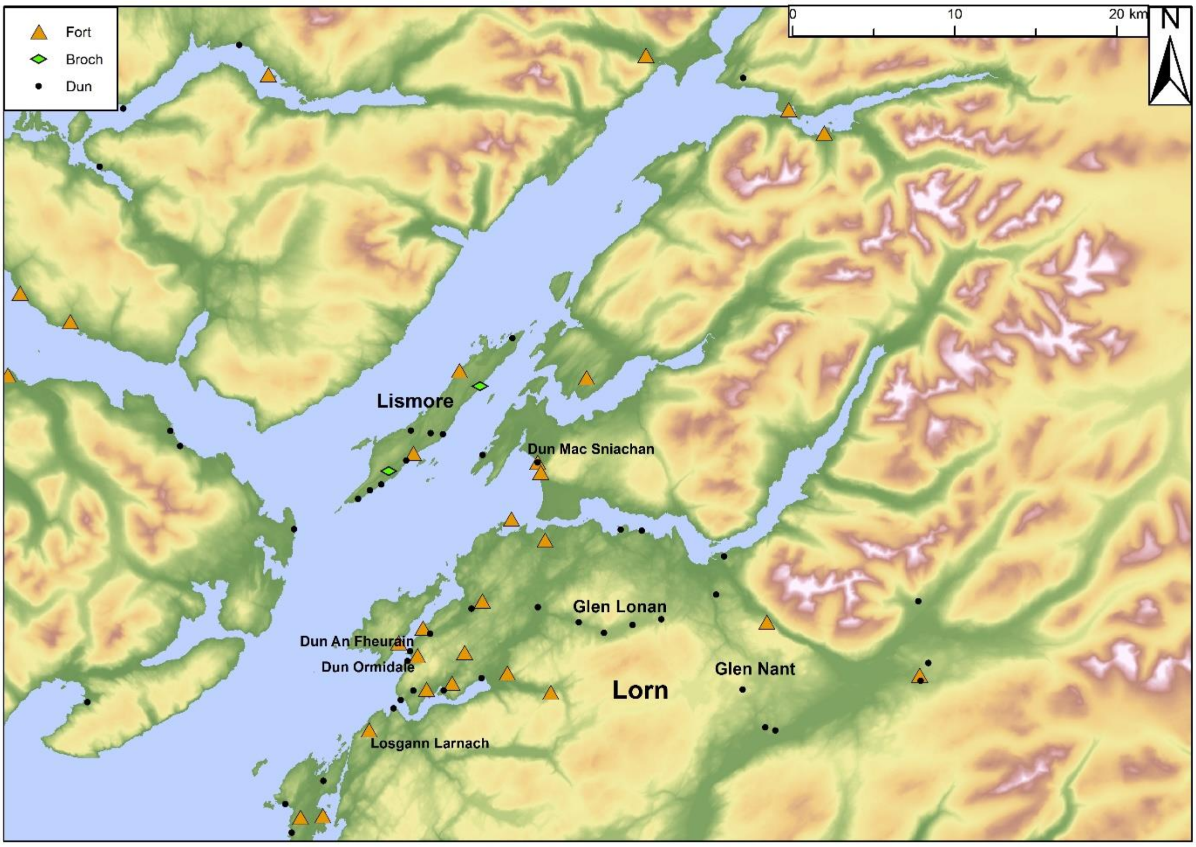

Figure 4.9: *Distribution of enclosed sites in Lorn. Sites are categorised by RCAHMS Canmore class.*

4.4.5 Discussion

The general later prehistoric settlement pattern in northern Argyll is one of dispersed farmsteads. There are few sites in the Small Isles, Mull, Coll or Tiree whose size, defensive strength or landscape position suggest that they are central places or hilltop towns as defined by Cunliffe (1984) or Childe (1935a). Many of the promontory enclosures on the Small Isles and the Inner Hebridean islands are liminal in their locations or extremely inaccessible, and it is not impossible that they held ritual significance for the inhabitants of the islands, or were used for ceremonial purposes. However, those that survive in better condition, such as those on Eigg, or have been excavated, like Creag A'Chaisteal on Mull, appear to contain structures, and it is more likely that most were domestic settlements of a heavily defended nature. While it is impossible to tell without substantially more excavation, there is little evidence for any clear hierarchy among settlements, and a segmentary framework based on the enclosed homestead is plausible as a political structure for the later prehistory of the region.

In Lorn, the northern part of mainland Argyll, the presence of larger, higher altitude enclosures like Dun Ormidale and Dun Mac Sniachan indicates that there may be evidence for greater centralisation of society. It cannot be assumed that they were permanently occupied, but even so these sites presumably performed some kind of communal role, and their landscape position suggests that they were more concerned with the sea than inland, a pattern noted by Werner (2007, 138-9) for large rectilinear or irregular enclosures in her viewshed analysis of enclosed sites in Argyll. The continued occupation of specific locations over a substantial period of time, as is indicated by the three enclosures at Dun Mac Sniachan, suggests that some of these positions were of particular importance. The value of these particular locations is uncertain, they were perhaps useful positions from which to observe or control seaward travel along the Firth of Lorn, or maybe they were preferred for reasons of ritual, tradition or community memory.

4.5 Southern and Mid Argyll

4.5.1 Islay, Colonsay and Jura

Islay has a remarkable range and concentration of probable later prehistoric enclosed sites and it is unfortunate and perhaps surprising that none have been excavated. Its forts and duns have been surveyed many times over the past century, Childe (1935c) visited many, the Piggotts conducted a more comprehensive survey of a few sites (Piggott & Piggott 1948), and Newall surveyed more in the 1960s (Newall 1963; 1964). The RCAHMS investigated eighty in the 1980s, thirty of which they classified as meeting the requirements to be a fort (RCAHMS 1983, 21). Islay has among the biggest and most poorly preserved promontory forts in western Scotland, with some, for example Dun Bheolain *(37412)* and Dun na Faing *(37243)*, enclosing headlands of over 2 ha. These huge enclosures are mainly along the west coast (Figure 4.13), on the Rinns of Islay, and most comprise one line of heavy drystone walling. Many have considerable topographic prominence and are located at higher altitudes than promontory forts elsewhere along the west coast of Scotland. Beinn A'Chaisteal *(37526)*, a 1 ha enclosure in the northern Rinns, is positioned at 125 m OD and has a topographic prominence of 105 m. It is situated on the highest point of this part of Islay, with all ground within 7 km below it. Notably it looms over a much lower sea-girt promontory, Alt nan Ba *(37513)*, on which there is evidence for a considerable number of settlement structures (Figure 4.10). The RCAHMS Inventory (1984, 21) has doubted the habitability of many of this group of large prominent forts, due to the high and exposed nature of their positions, arguing that security was clearly a more important factor in their conception than comfortable or convenient habitation. If this is so, then there is scant other surviving settlement evidence in this part of Islay suggestive of a population that would require the fortification of such large areas. The interior of the Rinns, a region of mostly infertile peat moorland, is occupied by a series of small, mostly rectilinear enclosures (Gilmour 1994, 44; Figure 4.11). It is an unusual distribution, given that domestic settlement sites elsewhere in Argyll tend to be restricted to the coast, except where there is a large area of fertile ground like in north west Mull or Lorn. Indeed, the settlement distribution in western Islay bears little relation to the location of what is today considered to be the best agricultural land (Figure 4.11).

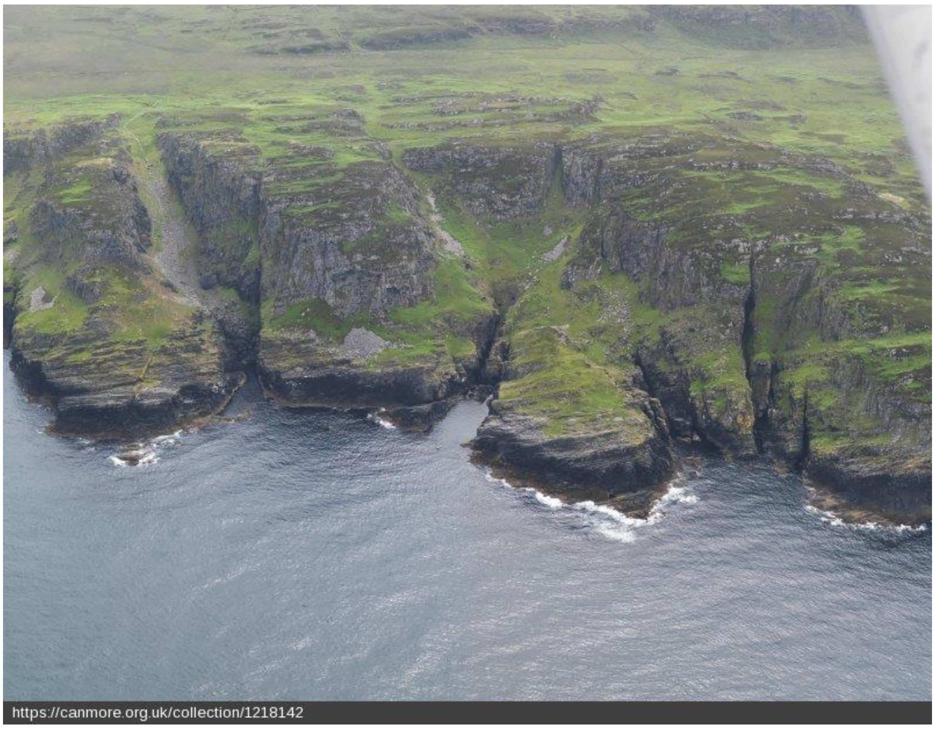

Figure 4.10: *Beinn a'Chaisteal, the high promontory in the left centre, overlooking Alt nan Ba in the right centre of the picture.*

The greatest concentration of enclosed sites on Islay, and one of the densest groupings in western Scotland, occurs in the far south east of the island, along the coast in the region of modern day Port Ellen and Ardbeg (Figure 4.12). This is a varied collection of sites, with numerous promontory enclosures, prominent inland forts, and small irregular sites classed as duns, and with very few Atlantic Roundhouses. Many of the smallest enclosures follow the topography of the knolls upon which they are placed, such as Cill a'Chubein *(38085)* or Cnoc Crun na Maoil *(38009)*, rather than imposing a circular shape on their environments, a pattern that is also visible among the larger inland enclosures. Of these, Borraichill Mor *(37533)* is the biggest and highest in altitude, at over 0.7 ha and 156 m OD., situated on an almost square eminence which is very prominent both over the sea and the comparatively low-lying coastal plain nearby. Identified by Childe (1935c, 83; 85) as 'approaching the size of a hill-top town' it consists of one massive drystone wall following the edges of the hilltop, enclosing a featureless and in some places rocky interior (Figure 4.13).

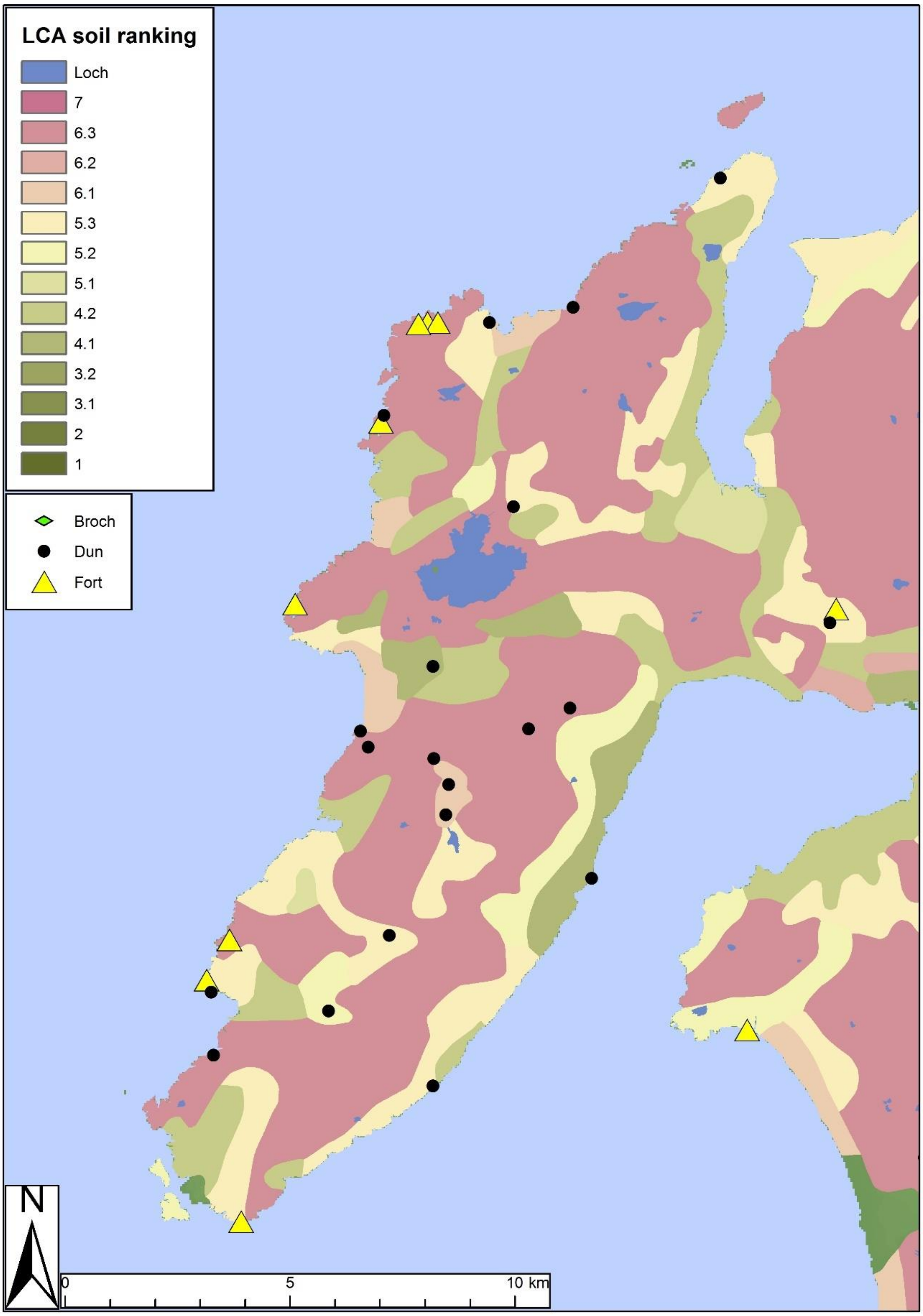

Figure 4.11: *The distribution of sites on the Rinns of Islay overlaid on National Soil Survey Land Capability for Agriculture mapping. Showing that the location of enclosed sites appears to be unrelated to the quality of the land. See Chapter 6.2.3 for explanation of rankings.*

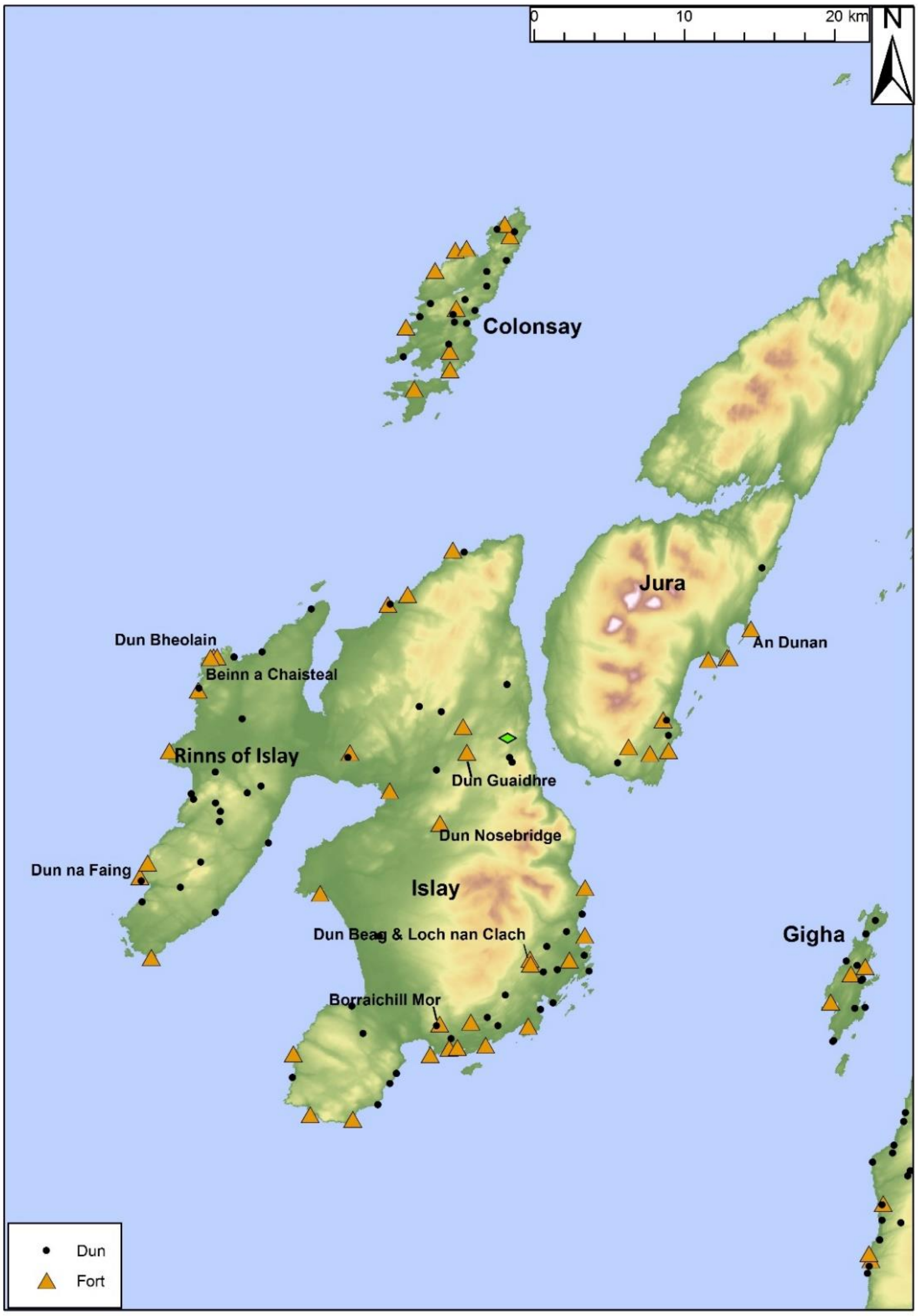

Figure 4.12: *Distribution of enclosed sites in Islay, Colonsay, Jura and Gigha. Sites are categorised by RCAHMS Canmore class.*

At a similar elevation over 5 km further east are two adjacent heavily defended enclosures, one on a narrow rocky ridge, the other on a steep knoll on the lower, southwestern end of a 150 m high shelf. The latter – Dun Beag, Kintour *(38095)* – encloses nearly 0.3 ha with well-preserved defences making considerable use of the steep natural topography, while the former, Loch nan Clach *(38094)*, is smaller and extremely narrow. The juxtaposition of these sites is unusual, and the construction of their defences has been described as crude by the standards of drystone walling normally found in enclosures of this size (RCAHMS 1984, 85; 98). They fit the general character of enclosed sites in this part of Islay in that they seem to prioritise efficient fortification over impressive appearance, or creating a structure of a particular shape or morphology. This is also a characteristic that is shared by the eight promontory forts along this coast, most of which are small compared to the Rinns promontories.

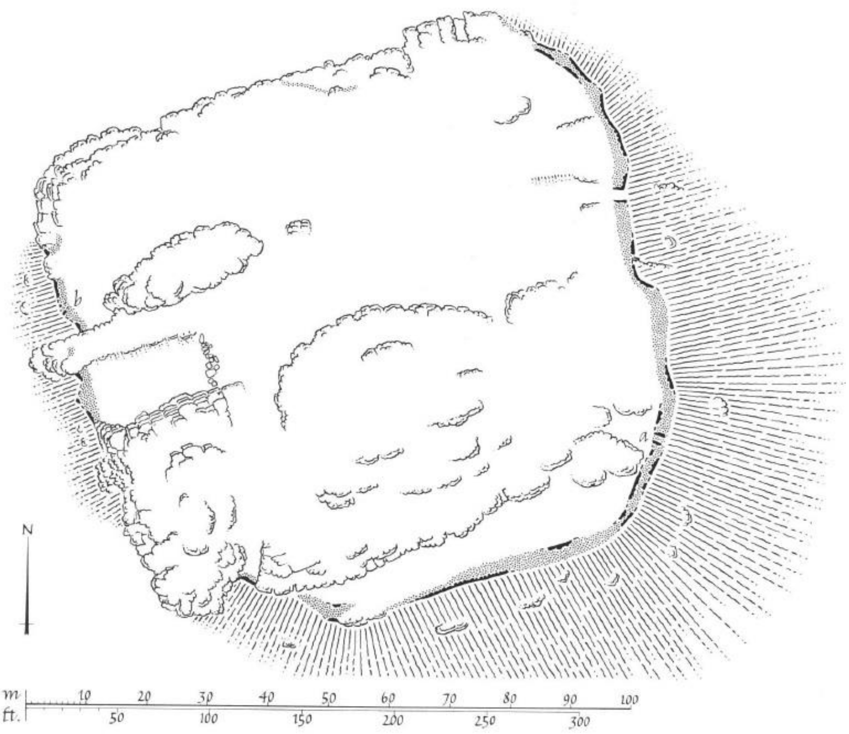

Figure 4.13: *Plan of Borraichill Mor. The artificial defences follow the steep edge of the hill and are especially evident on the east and south (After RCAHMS 1984, 82).*

The interior of the northern part of Islay contains one of the largest areas of land today classed as arable in Argyll. There is also a concentration of later prehistoric enclosed sites, many located inland (Figure 4.12). Of particular interest are two complex enclosures of remarkably similar character – Dun Nosebridge *(37721)* and Dun Guaidhre *(37745)*. These two forts survive as multivallate earthworks with external ditches, of a style that is widespread in East Lothian or southern Britain, but with no structural parallels on the other Hebridean islands, and only a couple in Argyll (Kildalloig *38707* and Cnoc Araich *38296* in Kintyre). The innermost enclosures of both are small in size – around 0.05 ha – but their overall footprint approaches 0.3 ha. Neither are especially prominent, being positioned on small hillocks in the surrounding rolling agricultural land, that have been effectively remodelled by the construction of the earthworks and ditches. They are very different from the remainder of enclosed sites on Islay, and not only in their construction methods. Rather than using the sheer cliffs of a naturally defensive location those who constructed these sites went to the effort of entirely encircling positions of mediocre prominence with elaborate defences. The innermost enclosure at Dun Nosebridge is regularly rectangular, reflecting a conscious decision by the builders to construct that shape, in contrast to a majority of Hebridean enclosures whose shape is determined by the topography of their location. Both sites are in more sheltered, habitable positions than most on Islay, and are amongst the best farming land on the island, and thus may be permanent settlements belonging to agricultural communities. Their elaborate defences and the labour presumably needed to construct them is suggestive of a potentially higher status than other enclosures, either as communal sites serving a large group of people, or as structures belonging to those of a higher rank in a hierarchical society who could call upon the labour of others (RCAHMS 1984, 91-2; 94-5).

Colonsay, a low-lying, fertile island by Hebridean standards, is very heavily populated with likely later prehistoric enclosed sites of varied type. Among the smaller sites are both Atlantic roundhouses like Dunan Nan Con *(37884)* or Dunan Leathan *(37915)*, and rectilinear examples, e.g. Ardskenish *(37980)* or Dunan nan Nighean *(38209)*. The latter is the only known site on Colonsay to be excavated, with a small domestic pottery assemblage recovered by Piggott in the 1940s (Piggott 1951). The larger sites enclose interiors of 0.1 ha and below, with the exception of one fort, Dun Uragaig *(37824)*, which cuts off a promontory of roughly 0.7 ha on the north west coast, and which has in its interior numerous hut platforms. Other large enclosures showing domestic occupation evidence on Colonsay include Dun Meadhonach *(38204)* and Dun Domhnuill *(37809)*, 0.1 ha forts on craggy knolls, although the structures identified in both cases have been interpreted as secondary (RCAHMS 1984, 89; 92-3).

In comparison, Jura, rocky and infertile, has few enclosed sites, and almost all are in the far south east. There is only one Atlantic roundhouse on Jura, compared to 22 on Colonsay and Tiree, despite Jura being twice as large as those two islands combined (Gilmour 1994, 43). All of its enclosures are smaller than 0.07 ha in size and none have been investigated beyond surface survey. A complex fort, An Dunan *(83073)*, occupies a promontory jutting into the Sound of Jura beside Lowlandman's Bay directly east of the Paps of Jura. It consists of several enclosures cut off by up to six separate walls. While the innermost enclosure is just 0.05 ha in size, the total area that the fort occupies exceeds 0.5 ha. The elaborate nature of the site has led the RCAHMS Inventory to speculate that it may have been occupied for a long time, and that it may be comparable to Dunadd in its morphology and its organisation of space (RCAHMS 1984, 75).

4.5.2 Mid Argyll, Cowal, Knapdale and Northern Kintyre

There are three enclosed sites that stand out in Mid Argyll and Knapdale for their size, and these three enclose areas that are at least ten times greater than the majority of sites. One, Creag a'Chapuill *(22773)*, enclosing 4 ha, is also exceptional among the forts of Argyll in its topographic prominence. Located on a high, steep hill, with steep cliffs cutting off access from the west and south, it has a heavy drystone wall on the remaining sides (Figure 4.14). Opinion differs as to the presence of structures in the interior, with hut circles identified by Campbell and Sandeman (1962, 43) not recognised by a later RCAHMS survey (1988, 147). Its position is such that it dominates the valleys to the south and east (Figure 4.16), and it is particularly visually prominent in the direction of Kilmartin glen, where there are large expanses of fertile land and a proliferation of earlier prehistoric ritual monuments. It differs from forts of above a hectare in the Inner and Outer Hebrides, and further north on the Scottish mainland, in that its prominence is landward, unlike for example the promontory enclosures of Lewis or Islay, or Dun Ormidale in Lorn. Dun na Ban-Oige *(22830)*, three kilometres to the north east (Figure 4.16), is more prominent seawards, its location having excellent views south west in the direction of Loch Craignish and the Craignish peninsula. In morphology it is like a slightly smaller version of Creag a'Chapuill, with cliffs guarding the southern side, and a stone rampart cutting off the more accessible northern approach, and it has been described as 'strongly defensive' (Campbell & Sandeman 1962, 52). Visibility from its position and that of Creag a'Chapuill are in opposite directions, towards different areas, perhaps suggesting a connection with specific, distinct communities.

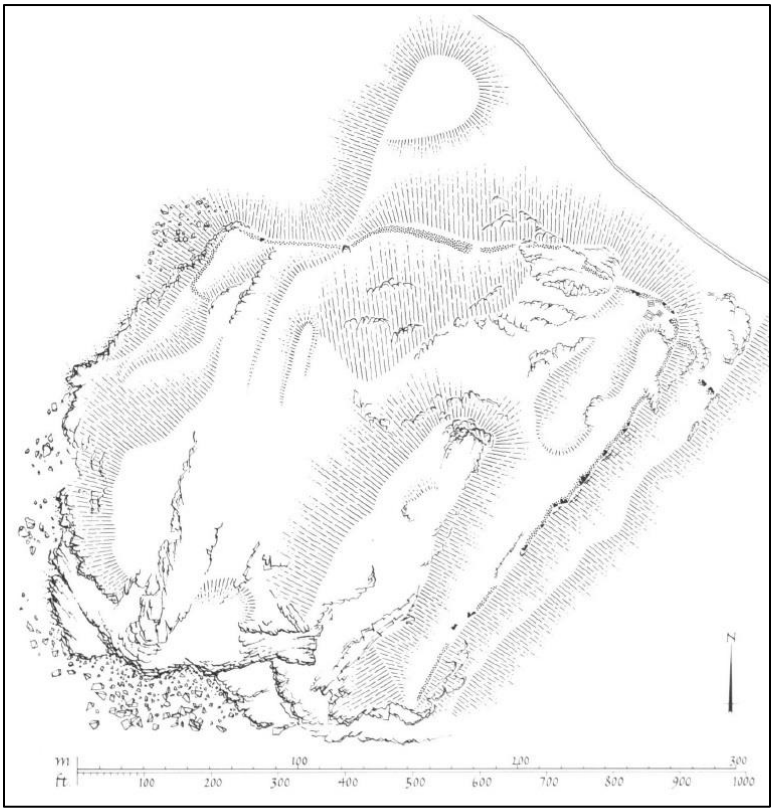

Figure 4.14: *Plan of Creag a'Chapuill, showing walling to north and east, and steep cliffs on the west and south (After RCAHMS 1988, 147).*

The third comparatively large enclosed site, Sithean Buidhe *(39061)*, is even more sizeable, and is unusual compared to most other enclosed sites in Argyll. Lengths of walling block off approaches to a rocky eminence in the northern part of Knapdale, overlooking Loch Caolisport. The defences incorporate an easily traversible loch in their circuit, suggesting that defence may not have been as important to its builders as impeding casual movement, or perhaps projecting an appearance of enclosure. The interior, measuring a comparatively enormous 8.5 ha, is mostly outcrop and marsh, with few favourable locations for settlement (RCAHMS 1988, 169). Campbell and Sandeman, in their survey of Mid Argyll monuments, hypothesised that it might be a ritual enclosure connected with the loch, although they did not rule out the possibility that it may have been a settlement site (Campbell & Sandeman 1964, 59). It may have incorporated both roles - these two interpretations do not have to be mutually exclusive.

Smaller enclosures are densely concentrated in this part of Argyll, with specific clusters in Craignish, around Kilmartin Glen, on the Tayvallich peninsula and in the western part of Cowal (Figure 4.16). Among these are many Atlantic roundhouses, some of which have complex architecture (Gilmour 1994, 43). Ardifuir *(39140)*, overlooking Loch Crinan to the west of Kilmartin, is a complex Atlantic roundhouse that was excavated by Christison (& Anderson 1905). He noted that while it was superficially similar to the brochs of the Highlands, it differed in that it was much larger and the wall thinner (Christison & Anderson 1905, 269-70). Locally made pottery, a sherd of Samian ware and metalworking debris of a similar type found at Dunadd led Christison to date the site to the 1st millennium AD, while another sherd of pottery was later identified as E-ware, an imported early Historic type (RCAHMS 1988, 172). The poor recording, and lack of accurate plans or section drawings makes it unclear as to the nature of the context that these objects were found in, however. It is therefore unclear whether they relate to primary or secondary occupation. Christison investigated a second small galleried structure, roughly oval in shape – Druim an Duin *(39160)* in Northern Knapdale (Christison & Anderson 1905, 285-92). Unusually for a site of Atlantic roundhouse size it has two entrances, both with door checks – places where a door or gate would have been mounted. Rotary quern fragments recovered suggest occupation either at the very end of the first millennium BC, or at some point in the 1st millennium AD.

One Atlantic roundhouse in Mid Argyll has been subject to modern excavation and radiocarbon dating. A solid-walled example on the eastern bank of Loch Glashan *(40067)*, in the Moine Glas to the east of Kilmartin, was investigated by Henderson and Gilmour (2011), with intensive survey and a trench through its defences and part of its interior. The results suggested more than one phase of occupation, and later 1st millennium BC dating, significantly earlier than the dates suggested for Ardifuir and Druim an Duin. These findings, along with re-examination of the poorly stratified excavations of early 20th century archaeologists such as at Kildalloig dun in Kintyre, have underpinned Henderson and Gilmour's reinterpretation of the dating of sites classed as duns in the Atlantic west. The roundhouse at Loch Glashan is situated close to where a crannog *(40047)* was excavated in the 1960s, unearthing an exceptional domestic assemblage and 1st millennium AD dating (Scott 1960; Earwood 1991).

Along with small structures of roofable size and large hilltop enclosures, there are, as throughout western Scotland, many enclosed sites of intermediate size, variously classed as forts and duns. They exhibit a more inland distribution than elsewhere in Atlantic Scotland, particularly in and to the north of Kilmartin Glen, although most examples are still close to the sea (Figure 4.16). Dun Skeig *(38925)* is an intriguing site on a conspicuous coastal ridge in northern Kintyre, a sizeable 0.4 ha fort with two small curvilinear enclosures in its interior. One of these is a probable Atlantic roundhouse of roofable size, while the other is slightly larger and vitirified and appears to overlie the largest enclosure. This complex of sites has been mentioned as being an excellent example of a visible stratigraphic relationship between sites classed as forts and duns (Harding 1997, 129) or as evidence of the 'replacement' of forts by duns (Nieke 1984a, 102), the latter hypothesis perhaps unwisely assuming a unity of function among the larger and smaller enclosures. Of a comparable size to the largest enclosure of Dun Skeig is the vitrified site of Duntroon, a 0.35 ha multivallate fort on a low knoll at the seaward end of Kilmartin Glen. Excavated, like several others in the surrounding area by Christison (& Anderson 1905), the main purpose of the investigations was to ascertain the nature of vitrification and the dating of vitrified forts. The large saddle quern assemblage obtained has been used by Nieke (1984a, 103) to argue for the 1^{st} millennium BC dating of most forts, an assertion for which there is no contrary evidence except the heterogeneous nature of the fort category, and the low number of those sites that have been subject to modern excavation. The large quantity of querns at Duntroon do indicate that the site was being used for grain processing, although without knowledge of the context in which they were found it is unknown whether the sizeable assemblage represents mass processing of grain for a short time period, or sustained smaller-scale activity over centuries. Evidence for the former might indicate that it was a central place, somewhere that an agricultural community came together for communal activities related to the arable cycle, while the latter may be indicative of less intensive processing related to smaller groups that inhabited the fort.

Figure 4.15: *The lower enclosure at Dunadd viewed from the summit.*

Eilean an Duin *(22536)*, an irregular 0.15 ha enclosure on a small island off the Craignish peninsula, is one of only two sites above Atlantic roundhouse size to be radiocarbon dated in this part of Argyll. A small scale excavation did not recover any objects, but did manage to retrieve charcoal from a context interpreted as providing a *terminus post quem* for construction, allowing the structure to be dated to the mid late 1st millennium BC (Nieke & Boyd 1987, 55-6). The other fort, Dunadd *(39564)*, would be exceptional even if it had not been excavated. A well preserved multivallate series of enclosures (Figure 4.15) on a low but prominent hill in the middle of low-lying Kilmartin Glen, it dominates the landscape around it. It has often been described as an archetypal example of a 'nuclear' fort, that is, one with a hierarchical system of enclosures descending from a summit 'citadel' to multiple less prestigious lower areas (Stevenson 1949; Alcock & Alcock 1987, 130). The assemblage, obtained from three separate excavations (Christison & Anderson 1905; Craw 1930; Lane & Campbell 2000), is outstanding, and undeniably high status, with quantities of imported French pottery and prestige metalwork. The dating evidence obtained during the modern, higher quality investigation suggests that the upstanding remains date to the mid later 1st millennium AD, but there is also evidence for mid Iron Age occupation of the hilltop. The remarkable metalworking assemblage indicates large-scale production of prestige copper-alloy items, including brooches, in the 7th century AD, while the quantity of rotary querns, most found in Christison's 1904-5 excavations, suggests extensive grain processing. Traditionally considered to be the capital of historically documented Dal Riata (Skene 1867), the results of the most recent excavations do not disprove that theory (Lane & Campbell 2000, 258-63).

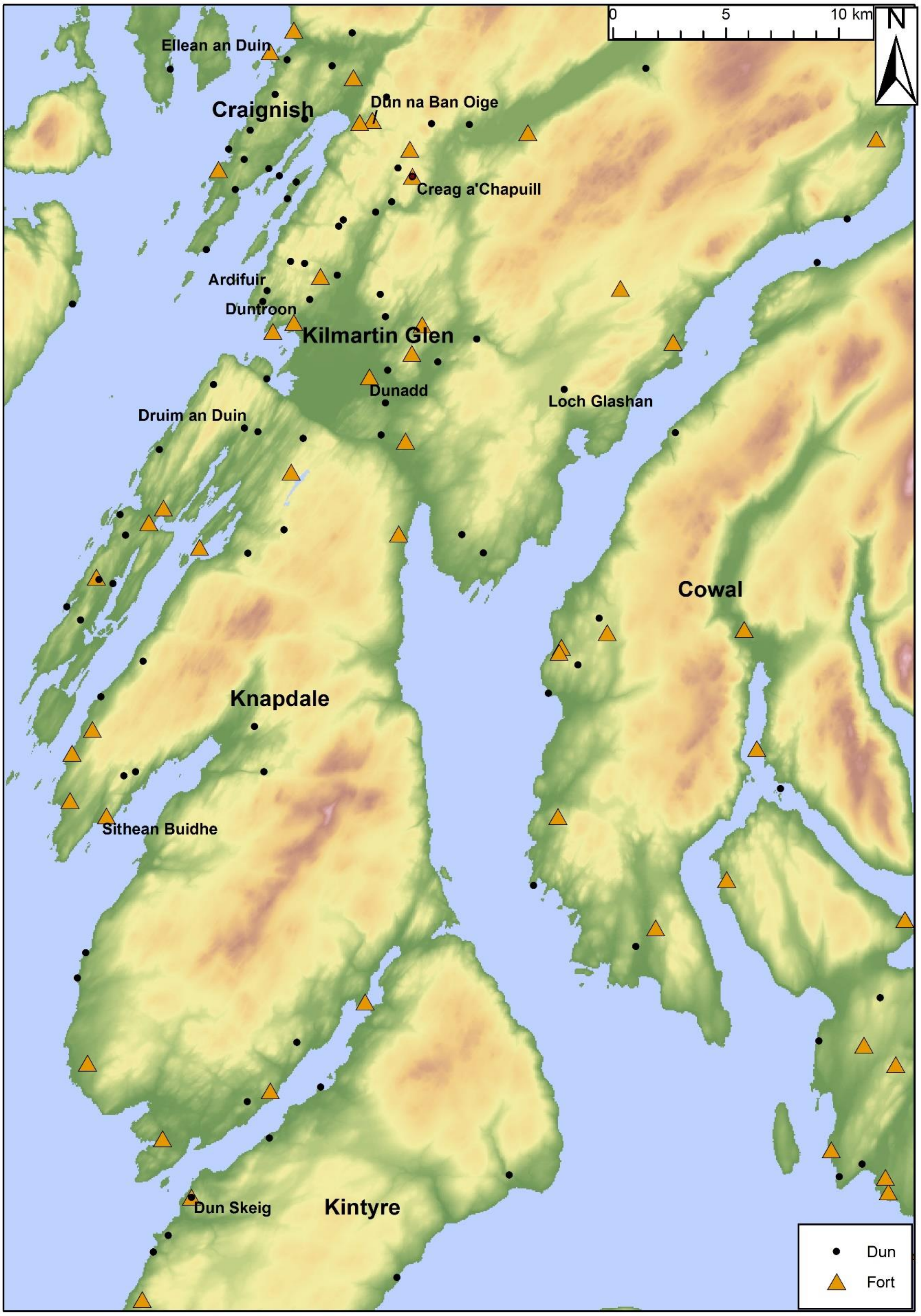

Figure 4.16: *Distribution of enclosed sites in Mid Argyll, Knapdale, Cowal and northern Kintyre. Sites are categorised by RCAHMS Canmore class.*

4.5.3 Bute

The island of Bute lacks the concentration of Atlantic Roundhouses and other small settlement structures that characterises most of Argyll and the Hebrides (Figure 4.17). There are just four sites classed as duns, three of which are at the larger end of the dun classification, while one, Dun Burgidale *(40300)* is a complex Atlantic roundhouse of roofable size. This absence of monumental roundhouses is perhaps surprising because Bute is agriculturally productive, and every fertile island in the Inner Hebrides is densely populated with small drystone circular sites. Crannogs are, however, present within the lochs in the interior of the island, and may represent an analogous class of structure. The more numerous sites classed as forts are mostly very small – indeed the majority of enclosed sites on Bute, including the duns, are between 0.03 ha and 0.04 ha in size. The standout site is the complex of enclosures at Dunagoil, consisting of a vitrified fort *(40291)* on a headland, and a smaller enclosure, Little Dunagoil *(40280)*, on an adjacent hilltop. Several excavations took place throughout the beginning and middle of the 20th century revealing a rich domestic assemblage consistent with Late Bronze Age or Early Iron Age occupation, and quantities of metalworking debris (J. Marshall 1915; D. Marshall 1964). A comprehensive survey of the site in the 1990s led to the identification of a 'bailey' cutting off a large area beneath the fort of Dunagoil and possibly joining it to Little Dunagoil, creating a large territorial enclosure, with the vitrified fort merely a 'citadel' within that enclosure (Harding 2004b). The total area enclosed would then measure at least 2 ha and perhaps as much as 5 ha and would have incorporated two natural harbours – Dunagoil Bay and a small inlet at Port Dubh. Harding (2004a, 141-4) has identified several other possible 'terrain forts' like this in Argyll, with external lengths of walling cutting off approaches to a central citadel, for example Dun Chonallaich *(22772)* in Kilmartin, or Dun na Cleite *(21412)* on Tiree.

4.5.4 Arran

Later prehistoric enclosed settlement on Arran is primarily restricted to the coasts, reflecting the extend of better land, low lying ground, and also modern centres of population (Figure 4.17). There are only two sites present that are classed as duns, Kingscross *(40075)* and Torr a'Caisteal *(39674)*, and both appear to fit within the Atlantic roundhouse tradition. A multiperiod enclosed settlement at Kilpatrick *(39637)* on the west coast may belong with this group also. The majority of enclosed sites are drystone or earth and stone enclosures between 0.04 and 0.2 ha, many in high altitude coastal cliff-edge locations, e.g. Dippen *(40132)* or Creagdhu *(39658)*. One site stands out in terms of size – Drumadoon *(39199)* at 5 ha. The former is situated on a coastal ridge in a comparatively low lying area at Drumadoon Point on the west coast. A univallate fort in an exceptionally defensible position, it is especially prominent in a seaward direction towards Kintyre across Kilbrannan Sound. A second fort of comparable size may be present at Cnoc Ballygowan *(39617)*, but the surviving ramparts are very ephemeral in nature. No Royal Commission Inventory has covered the island, and none of its enclosed sites have been excavated, resulting in a dearth of information in the archaeological record.

Figure 4.17: *Distribution of enclosed sites on Bute and Arran. Sites are categorised by RCAHMS Canmore class.*

4.5.5 Discussion

The southern part of Argyll, including Islay, Bute and Arran, shows much more differentiation in terms of size amongst its enclosed sites than Atlantic Scotland further north. It is tempting to interpret this as a manifestation of a more centralised political structure, at least for the period when the largest sites like Creag a'Chapuill or Drumadoon were in use. The presence of large assemblages of querns at Dunagoil, or even smaller sites like Duntroon suggests mass centralised agricultural processing, certainly indicating activity that may have involved the coming together of farming communities. The recent identification of large terrain enclosures like Dunagoil may suggest that many more such sites exist, unrecognised among the forts and duns of western Scotland. The presence of more of these enclosures among a drystone settlement record that is not especially differentiated in size would perhaps change the overwhelming picture of later prehistoric Atlantic Scotland as a place of dispersed agricultural settlements.

There is a definite correlation between land of higher quality and concentrations of monuments, with Colonsay, Kilmartin Glen, Gigha and southern Kintyre (see chapter 7) particularly rich in later prehistoric settlement remains. Gilmour (2000a, 144-5) hypothesised that economy rather than defence was the main catalyst for the positioning of most enclosed sites in Argyll. He argued that a combination of small size and, in many cases, overlooking higher ground means many sites were unlikely to have 'decisively defensive' roles. This interpretation depends on your conception of defensive, whether it is defending against armies or small bands of attackers – the defensive qualities of many of these sites are better suited to countering the latter. Many enclosures may be designed to be defended by only a small group of people, and in this sense, modest size is actually an advantage. Islay appears to have markedly more examples of this kind of enclosed site, with an apparent preference for easily defensible positions that required short sections of walling. It is different from elsewhere in that many sites were not necessarily in areas of better land, or at least what is more productive farming land today. Most enclosed sites in south eastern Islay, even the very smallest structures, make extensive use of natural topography in their defensive circuits. The resulting shape of the enclosed area is often very irregular, while the actual length of artificial walling is very short compared to the size of the interior. Arguably these topographically dependent structures are the antithesis of the broch tower – if the broch is a symbol of man bringing order or structure to nature, imposing a human-made shape upon the environment, as proposed by Hingley (1992, 188), then this is the opposite. Sites in this part of Islay, and also on the Rinns, exhibit least-cost, maximum efficiency enclosure, with an emphasis on making areas inaccessible with minimal effort. In contrast, structures like the broch tower use maximum effort to enclose a tiny interior, with questionable practical defensive benefits (Armit 2002, 111-3; Hingley 1992, 19).

The overwhelmingly coastal distribution of settlement sites in Argyll is undoubtedly related to low lying land and, consequently, farming land being along the coasts. The seaward prominence of many of the larger sites, like Dun Ormidale, Drumadoon, Dunagoil or Dun na Ban Oige is likely to be deliberate and underlines the importance of the sea economically, as well as for transport and communication, throughout the 1st millennia BC and AD.

4.6 Wigtownshire

Often included with Ayrshire and Renfrewshire by Piggott (1966) or Dumfriesshire and the rest of the Scottish Border counties in more recent syntheses of later prehistory (Hingley 1992; Harding 2004a), there has recently been a reimagining of Galloway's place in the Scottish Iron Age. The argument that it has much in common with parts of Argyll and Atlantic Scotland has centred on the predominance of promontory enclosures, along with upland drystone forts and a few sites of Atlantic roundhouse size exhibiting Atlantic architecture (Cavers 2008; 2010; Henderson 2007). The settlement record of the western part of Galloway, Wigtownshire, is dominated by promontory sites that can be divided into two broad groupings.

The first group are principally located on the Rhinns (Figure 4.20), and consist of roughly 0.1 ha to 0.2 ha craggy promontories cut off by stone walls, which make considerable use of cliff edges in their defences. The interior is often rocky and for many sites, like Mare Rock *(60364)*, Juniper Face *(60365)*, High Auchineel *(60376)* or Dunorrach *(61047)*, only a fraction seems suitable for settlement (Figure 4.18 & 4.19). Narrow promontory forts, in precipitous positions, with little apparent settlement space are also present along the less rocky Machars coast on the Solway Firth (Figure 4.21), and the Rhinns sites may have much in common with an enclosure at Carghidown Castle *(63132)*. An excavation of the latter in 2003 and 2004 revealed sporadic occupation of an enclosure with at least one roundhouse in the last couple of centuries of the 1st millennium BC (Toolis 2007). The site was seemingly violently destroyed at the end of its lifetime, and the intermittent nature of the occupation evidence, along with its landscape position led the excavator to interpret it as a defensive refuge, where inhabitants of the surrounding area retreated to in times of danger (*Ibid*, 310). Carghidown, like many of the Rhinns forts, is not at all prominent inland, with high ground immediately overlooking the site. The argument that Toolis makes for this site, that it would not have been impressive to look at and those approaching it would have looked down upon it, can be extended to Mare Rock or Dunorrach, for instance (*Ibid,* 304-8). These sites give an impression of insecurity and exposure rather than strength. It is unlikely that they were ever permanent settlement sites, an interpretation that could be shared with many coastal promontory enclosures on Mull or Islay.

Figure 4.18: *The promontory fort of Dunorrach, showing inhospitable interior and higher ground immediately inland.*

Figure 4.19: *The promontory fort at Mare Rock, taken from higher ground inland. Showing rocky interior. The rampart is most visible on the left.*

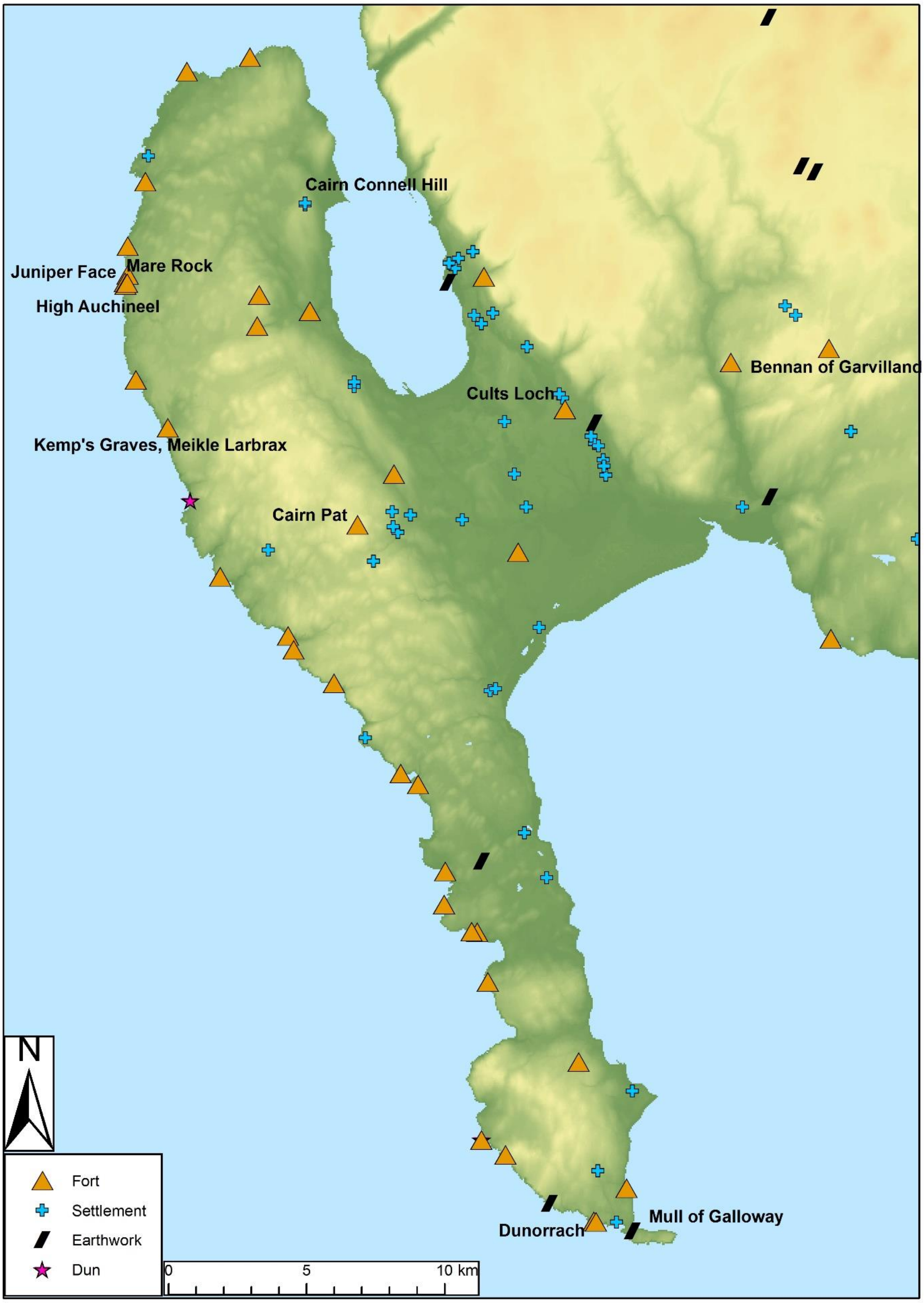

Figure 4.20: *Distribution of enclosed sites in the Rhinns of Galloway. Sites are categorised by RCAHMS Canmore class.*

Figure 4.21: *Distribution of enclosed sites in the Machars of Galloway. Sites are categorised by RCAHMS Canmore class.*

The second group of coastal sites are quite diverse, but can broadly be defined as coastal examples of inland site types, or settlements/forts that used favourable coastal positions for their locations. Specific examples would include cliff-edge sites like Barsalloch Point *(62816)* on the Machars and the large, multivallate Kemps Walk at Meikle Larbrax *(60312)* on the western Rhinns coast (Figure 4.20 & 4.21). The latter is an earthwork enclosing a broad, flat area of over 0.3 ha, seemingly ideal for settlement, on a coastal eminence that has been extensively artificially remodelled in prehistory. Also conspicuously different from the first group of promontory sites is Isle Head, on the Isle of Whithorn (*63098;* Figure 4.22). Occupying a locally prominent coastal knoll, multiple massive earthworks with ditches stretch across the low-lying headland below the summit, while more ephemeral outer ramparts cut off a wide flat area that shows evidence for probably more recent cultivation. The outermost rampart also encloses two stony inlets that would appear to be favourable landing places for boats. Given its size (0.3 ha), local prominence and the scale of its defences, Isle Head would appear to be a coastal promontory version of a site that may not simply have been a farmstead, or indeed a refuge. The conspicuous multivallate earthwork defences at Meikle Larbrax, Barsalloch Point and Isle Head, and elsewhere like Castle Feather *(63137)*, appear designed to convey an impression of strength, to impress visitors. There are, however, sites that do not fit within this twofold division of promontory enclosures in Galloway – the large-scale earthworks at Castle Feather and Burrow Head *(63134; 63136)* cut off interiors that are limited in space, and probably exposed and inhospitable. Thus, a straightforward division of sites into those that were at most occasionally occupied and permanently occupied settlements is impossible without further excavation.

Wigtownshire is less differentiated in terms of size than most regions in western Scotland, and considerably less so than neighbouring Kirkcudbrightshire (See chapter 9). Most enclosed sites appear to form a continuum in terms of size, from 0.05 ha to 0.4 ha, with three sites enclosing just over 1 ha. These three forts are evenly spread out throughout the region. Cairn Pat *(60559)*, the largest site in the Rhinns, dominates the landscape in that part of Galloway, and has exceptional long range visibility of the largest area of arable land in Wigtownshire, the low-lying ground near modern Stranraer (Figure 4.23). A multivallate earthwork fort that survives in poor condition, it is situated on the highest point in the Rhinns, but on a hill that is not especially steep, and would have required sizeable artificial defences to make practically defensible. The choice of dominating position over practical defensibility makes Cairn Pat possibly different in conception from, for example, Dun na

Ban Oige or Dun Ormidale in Argyll, both of whom are situated on hills with natural cliffs forming a major part of their defences, positions chosen in favour of nearby higher and more prominent hills that did not have those natural advantages. This contrast may be environmentally related, however, the topography of the Rhinns of Galloway is more gently sloping than that of mid and northern Argyll. Of the other two sites larger than a hectare, Knock Fell *(62146)* is on a prominent and much steeper hill in peat moorland in the northern Machars. It is spatially isolated from other sites, but has excellent long range visibility of fertile land near Glenluce and Stranraer. The third site, on Baldoon Hill *(63412)*, only survives as cropmarks within heavily cultivated land on a relatively prominent hill in the eastern Machars.

A set of earthworks drawn across the neck of the entire Mull of Galloway *(61051)* would, if they were prehistoric, enclose the largest promontory fort in Scotland, and probably the biggest in Britain at approximately 63 hectares. Comprised of up to three ramparts with ditches, a small-scale excavation in 2000 revealed no dating evidence, but showed that it was complex in nature, with a palisade trench and cobbled spread accompanying the dump ramparts and ditches (Strachan 2000). Traditionally believed to be a prehistoric boundary marker (Poller 2005, 132-3), its massive construction suggests an original size in line with fortification or the appearance of fortification. A second, smaller earthwork *(61050)* is present nearly 300 m north, and together they cut off the beaches and natural landing points at East and West Tarbet. There may then be some relationship between this enclosure, whatever its date, and access to and from the sea.

The remainder of the enclosed settlement record of Wigtownshire consists of a diverse collection of sites of both earthwork and drystone construction, and of various shapes and sizes. There are several prominent drystone hilltop enclosures, for example Bennan of Garvilland *(62426)*, Doon of May *(62203)* or Fell of Barhullion *(62757)*. The former is a 0.4 ha multivallate fort on a prominent knoll in the moors north of Glenluce, with an interior mostly comprised of outcrop, much of it probably unsuitable for domestic structures. The other two sites are smaller, at 0.1 ha and 0.07 ha, but situated on prominent hills, and Fell of Barhullion has a chevaux de frise comprised of numerous earthfast upright stones on north and south sides. There are also a number of inland promontory earthworks in Wigtownshire, including Kemp's Graves *(60845)* in the Rhinns, and an enclosure at Cults Loch *(61697)* in the Machars. The latter has recently been excavated, along with several prehistoric structures in and adjacent to the loch. A minimum of three phases of palisaded enclosure and three large ditches cut off a promontory of approximately 0.5 ha. The radiocarbon dates obtained gave evidence for the dating of two phases of occupation; a 2390BP date calibrated to 730-390BC at a 2σ confidence level (SUERC-27884: Calibrated using OxCal 4.1) for a context within the fill of one of the ditches and a 2230BP dated calibrated to 390-200BC at a 2σ confidence level (SUERC-27889: Calibrated using OxCal 4.1) for the fill of a recut palisade slot (Cavers & Crone 2010, 4).

Figure 4.22: *Isle Head, from inland, showing multivallate earthwork defences.*

Figure 4.23: *Photograph taken from Cairn Pat looking east towards some of the best farming land in western Scotland.*

The fort at Cults Loch lies adjacent to a complex system of prehistoric structures, including a promontory settlement, where numerous wooden structural features were unearthed, and a number of crannogs *(276231; 276230)*. Crannogs are widespread in Wigtownshire, and many have been radiocarbon dated, mostly to the second half of the 1st millennium BC, although a few were occupied in the early or mid 1st millennium AD (Cavers 2010, 94-109). Enclosed sites classed as settlements or homesteads are also widespread throughout the region, many identified from aerial photography. These have been differentiated from enclosures categorised as forts mainly on assessment of their defensibility, and are mainly similar in character to the settlements of Kirkcudbrightshire (see Chapter 9). There are several unusual rectilinear enclosures however, some visible only as cropmarks, such as those at Cairn Connell Hill *(81597; 81598)* in the Rhinns (Cowley 2000, 173; Cowley & Brophy 2001, 67-9), and others clearly visible on the surface, such as Rispain Camp *(63122)*. The latter is a rectangular banked and ditched enclosure of roughly 0.3 ha, located on a slight swelling in the ground in the southern Machars. Excavated in the 1970s and early 1980s, it was dated to the late 1st millennium BC, with at least two roundhouses in the interior, and a few stone and metal objects consistent with domestic occupation the only finds (Haggarty & Haggarty 1983). Convincing affinities have been spotted between these rectilinear sites and others across southern Scotland and northern England as far away as Northumberland (Cowley 2000, 172-3).

Among the identified smaller enclosed sites are many classed as homesteads, most of which are below 0.05 ha in size, and generally circular. Two have been excavated, at Airyolland (*62706;* Cavers & Geddes 2006) and Chippermore (*62105;* Fiddes 1953). No datable remains were found in either case, but parallels were drawn with the duns of Argyll by the excavators of the former (Cavers & Geddes 2006, 8), and Cavers (2010, 87) has suggested a mid to late Iron age dating for this type of site. Several structures with marked similarities to the curvilinear and rectilinear duns of Argyll are also present, and sites like Stairhaven *(62292)* and Teroy *(60815)* clearly fit within the range of sites that would be considered an Atlantic roundhouse in Argyll or Skye. Finally, there is evidence for significant densities of unenclosed roundhouses, or hut-circles in Wigtownshire. The known distribution corresponds closely to the areas covered by RCAHMS surveys, suggesting that considerable densities remain undiscovered. The same is also true of many of the enclosed settlements, with a particular concentration apparent in the Stranraer area, where conditions for aerial survey are particularly favourable.

4.7 The case study regions

The three parts of Western Scotland chosen for GIS-based analysis were Kintyre, Skye and the Stewartry of Kirkcudbright. It was believed that among them these three areas would capture the variety in topography, soil types and architectural styles that exists in the overall study area.

Kintyre was chosen to explore the ambiguous relationship between sites classed as forts and duns in the West, and particularly within Argyll. Kintyre has an unusually high number and concentration of forts and duns especially in the southern half of the peninsula which is likely related to the presence of a large fertile depression known as the Laggan, west of modern-day Campbeltown. It has some of the only surviving forts defended by earthen ramparts and ditches (Cnoc Araich *38296* and Kildalloig *38707*), an unusually large fort (Cnoc Araich), a vitrified fort (Carradale Point *39221*), an excavated and radiocarbon dated fort (Balloch Hill *38340*; Peltenburg 1982) and several multivallate and seemingly multi-phase forts (e.g. Ranachan Hill *38368*, Largiemore *38369*, Balloch Hill). There are some sites that do not fit easily into the RCAHMS size based categorisation of fort and dun such as Putechantuy fort *(38476)* or Dun Sheallaidh dun *(37478)*, and places where duns and forts have been built in the same locations and a stratigraphic relationship may be visible (Dun Skeig *38925*, Cullan Doon *38319*, Belfield *38828*). Among the duns are some with complex Atlantic architecture (e.g. Borgadel Water *38310*, Kildonan Bay *38756*, Rubh a Mharaiche *38218*), some with outworks (e.g. Culinlongart *38354*, Kilchrist *38328*) and many that are unusual (i.e. not curvilinear) in shape such as the sub-rectangular stack site of Dun Fhinn *38467* or the D-shaped Dun Mhic Choigil *38479*. Kildonan Bay is also one of the few duns in Argyll that has been radiocarbon dated (Peltenburg & Hood 1979) and intensively excavated (Fairhurst 1939). A combination of these factors makes Kintyre an excellent case study.

Skye is a good candidate as a case study because it represents an area regarded by many as archetypally Atlantic in character (e.g. Henderson 2007, 154-161). It has much in common with the Western Isles, sharing a similar range of monument types such as chambered tombs and brochs that are distinctive from Argyll (Armit 1996, 4-5). For Armit, Skye and the Western Isles could have formed a distinct ‘Hebridean zone’ in the Iron Age and Early

Historic period, and Skye was also grouped together with the Outer Hebrides in the RCAHMS Inventories (1928). As well as well-preserved brochs/complex Atlantic Roundhouses (e.g. Dun Beag Struanmore *11062*, Dun Hallin *10905*, Dun Colbost *10833*), Skye has many sites interpreted as duns including some that are unusually large and difficult to define as fort or dun (e.g. Dun Liath *11206*, Peinduin *11130*). Also it has many sites categorised as forts, none of which has ever been excavated, with some relatively large and complex examples such as the multivallate, complex fort and dun of Dun Skudiburgh *(11195)* and the massively defended fort of Dun Gerashader *(11271)*. Skye represents an opportunity to explore the relationship between uninvestigated forts, duns and brochs in an island landscape, a combination of factors that is distinctively different from Kintyre or Kirkcudbrightshire.

Kirkcudbrightshire is the eastern half of Galloway and, with Wigtownshire has been considered part of Piggott's Solway-Clyde region (Piggott 1966) and often grouped with the Scottish Borders (Harding 2004). It has, however, recently has been considered an area of 'Atlantic influence' by Henderson (2007, 164-6). There are few known duns or sites with distinctively Atlantic architecture, but scooped settlements characteristic of the Border region are not present, and instead west of the River Nith there are walled curvilinear enclosures of a size and morphology not unlike, for example, the duns of Argyll (Cowley 2000, 171-173; Cavers & Geddes 2006). Kirkcudbrightshire falls between Eastern Dumfriesshire, which has been subject to intensive survey by the Royal Commission, and Wigtownshire which has recently received more archaeological attention (e.g. Poller 2005; Toolis 2007; Cavers 2008; 2010; Cavers & Crone 2010). It is a region with very many sites classed as forts, almost all unexcavated, including some very large examples, by Scottish standards, such as Giant's Dike *(64189)* or Moyle Hill *(64886)*, as well as numerous promontory forts. In contrast to Skye and Kintyre, a large percentage of sites survive as upstanding earthwork banks and ditches. In landscape terms it is also different, comprising a large lowland zone with high quality agricultural land and an upland moorland region, with the majority of settlement sites positioned on or close to the former. Two of the few forts in western Scotland subject to relatively large-scale modern excavation and dating are also in this area - Trusty's Hill (*63641;* Toolis & Bowles 2012) and the Mote of Mark (*64911;* Laing & Longley 2006). The presence of larger forts and the significantly lesser numbers of brochs and duns makes Kirkcudbrightshire markedly distinct from Kintyre or Skye and worthy of detailed investigation.

Between all three areas, their enclosed settlement records include large enclosures (above the step-change observed in Chapter 6 in area), small drystone forts, earthwork forts, complex Atlantic Roundhouses, small rectilinear enclosures and promontory forts. These case studies should provide a wide enough geographical coverage of western Scotland to be as representative as possible of its upstanding later prehistoric enclosed sites.

5. The internal area of enclosed sites in western Scotland

5.1 How important is internal area?

The area enclosed by sites is used throughout this thesis as an objective criterion that is an aid in classifying sites. There is no assumed, *a priori*, correlation between site size and function or hierarchy. The assumption that 'biggest is best' is a modern construction and, as Harding has argued in relation to house size, 'based on an entirely capitalist conception of status' (Harding 2004a, 292). It is important that we realise that this is an understanding of hierarchy that we cannot be sure that prehistoric people did, or didn't, share. If enclosure in the Iron Age was the delimiting of an area of land that was different, or that had special qualities to a community (e.g. Hingley 1984), then the particular qualities of that land to that community may have been more important than its size. For example, the summit enclosure at Dunadd is tiny, but incorporates rock carvings that may indicate that the space was special, interpreted by many as the inauguration point of Dalriadic kings (Chapter 3.3). Thus, the nature of the space, the qualities given to it by the inhabitants of the landscape, were presumably more important to its status than the size of the enclosure. In Wessex, no link has been found between large hillforts and assemblages that have been interpreted by archaeologists as high status (J.D Hill 1995).

Yet a large enclosed space allows for more activities by more people than a tiny one. At its simplest, a one-hectare area enables the presence of a larger community than a small, one-roundhouse homestead. Site size can then undoubtedly be linked, and has been by J. D. Hill (1995, 50), to the concept of a 'not-farmstead'. Enclosed area is also related to the length of boundary needed in order to enclose that space, and thus to the labour required in order to construct it. The construction and maintenance of boundaries has often been related to social differentiation (e.g. Sharples 1991, 260; Hingley 1992, 32), and use of dependent or subservient labour. There is, however, no straightforward correlation between boundary length and area enclosed in western Scotland. At some promontory sites on Islay or the Western Isles, areas of up to eight hectares are cut off by short lengths of walling and even the large hilltop forts of Mid Argyll make significant use of natural topography to minimise the artificial defences required. Furthermore, the size of the area enclosed does not always correspond closely to usable space. Many promontory forts have rocky and apparently unusable interiors, and this is also true of some inland sites, for example, much of the interior of the 7 ha enclosure of Sithean Buidhe in Argyll is bedrock or marsh, while the majority of the summit of Bennan of Garvilland in Wigtownshire is outcrop.

5.2 How has internal area been calculated?

The only large-scale attempt to determine the areas enclosed by sites in western Scotland was undertaken by Margaret Nieke (1984a). She used RCAHMS plans in her calculations, covering approximately half the sites classed as forts in Argyll. Since that time, Ordnance Survey plans have been digitised and high resolution satellite imagery is now available, allowing determination of site area for many more enclosed sites.

The Ordnance Survey 1:2500 and 6-inch surveys depicted and rectified on OS Mastermap, accessed through Edina Digimap Roam (digimap.edina.ac.uk), have been used widely for area calculation in this thesis. Where ramparts were visible on satellite imagery, the measurements were checked using either Google Earth or Bing Satellite. If planning of this accuracy was not available or the site was not sufficiently clear on satellite imagery, the 1:10000 OS plan was used, together with the measurements listed by RCAHMS or OS site investigators, to estimate the area enclosed. For those sites that have been visited, area was determined with a handheld GPS.

The area enclosed by a site's defences has been used in this thesis, as a more accurate determination of usable space within an enclosure, rather than the 'footprint' of the entire site. The main complexity encountered in this process was the calculation of the area of multivallate sites. In most cases the size inside the innermost rampart was used, as ramparts are too close together for there to be usable space between them. Thus, the innermost enclosure represents the likely extent of the zones where settlement or activity could have taken place within the site. For those examples where there is considerable space between innermost and outer enclosures or where there is definite evidence for multiple phases of enclosure, for example at Ranachan Hill or Dun Skeig in Kintyre, decisions have been made on an individual basis. For some the site has been treated as several different enclosures with different internal areas, and for others, like Dunagoil, on Bute, or Dun Skudiburgh on Skye, where outer defences seem to enclose areas of usable space, an outer rampart that most accurately represents the size of the site was used.

5.3 The internal area of enclosed sites across western Scotland

The internal area of all sites classed by the RCAHMS as 'forts' in western Scotland is depicted in Figure 5.1, with height above sea level on the y-axis. Also included for comparative purposes is a significant number of enclosed sites classed as duns and settlements. This scatter chart tells us a number of things about site area:

- The smallest sites are tiny compared to the largest (Figure 5.1).
- The continuum - the majority of enclosed sites, when viewed at this scale, form a continuum in terms of size up to approximately 4000 m^2/0.4 ha (Figure 5.1).
- The step-change - between 4000 m^2 and roughly 8-9000 m^2 there are very few sites (Figure 5.1). Those that are within this size range are nearly all promontory enclosures on the Outer or Inner Hebrides - a group of sites for which the relationship between currently measurable area and original habitable or usable area is most uncertain, due to the unknown extent of coastal erosion since their occupation, or much of the interior being outcrop (See Chapter 4.2). While across western Scotland as a whole the gap is disguised somewhat by these promontory sites, it is particularly evident for Galloway (Figure 5.2) and mainland Argyll (Figure 5.3).
- The largest enclosures - above approximately 9000 m^2 are the remainder of enclosed sites in western Scotland (Figure 5.1). These do not form a tight group like the continuum, but their size relative to each other makes them comparatively similar in scale. Most of them are also among the highest enclosed sites in western Scotland, almost all inland examples being above the 150 m contour. Those of this size that are lower-lying are, almost without exception, promontory forts on Islay or Lewis (See Chapters 4.2 & 4.5.1).

Enclosed sites in Scotland have frequently been described as forming a continuum from smallest to largest (SCARF 2012, 68; 74; 87). That is, in this authors opinion, not strictly true on closer examination of the data from western Scotland. The step-change is apparent in almost every region in western Scotland, although it is most pronounced on the Scottish mainland. In Galloway forts and settlements form a coherent group in terms of size up to 4000 m^2, with no sites between that size and 9000 m^2. On the Argyll mainland the step-change is much larger, showing greater differentiation between the continuum and the largest enclosures. On the Inner Hebridean islands, including Bute and Arran, the sites constituting the continuum are smaller in size, the dense concentration of sites in Figure 5.4 not larger than 2000 m^2, while the step-change is bridged by Islay, Mull and Colonsay promontory forts. There is, however, still a coherent group of small enclosures and a distribution of much larger sites. In North West Scotland, the step-change is not as apparent, and there is considerably less differentiation in the sizes of enclosed sites (Figure 5.5).

The map in Figure 5.6 shows the distribution of all probable later prehistoric enclosed sites above 9000 m^2/0.9 ha in area, as this appears to be the upper size limit of the step-change and the beginning of the size range of larger enclosures across much of western Scotland. It should be noted that the distribution of large inland hilltop enclosures is confined to mainland Argyll and Galloway. The only enclosed sites of this size in either the Inner or Outer Hebridean islands are promontory enclosures, and there may be many more of them than has already been identified (e.g. Burgess 1999). Sites over 0.9 ha are missing on Mull, Skye, Tiree, Coll, in Lochaber and on the North West mainland, with those regions exhibiting a less differentiated settlement record in terms of enclosed area.

Due to the homogeneity of the continuum, and the presence of the step-change between the smaller and larger enclosed sites, there is a strong argument to be made that the largest enclosed sites may be different in function or social role to the remainder. As discussed above, however, size is not useful alone as a determinant of site function or status. The three case studies in this thesis combine analysis of size with topographic prominence and morphology to further explore the character of sites in the continuum and the larger enclosures. Enclosed sites of all shapes and sizes, that may reasonably be 1st millennium BC or AD, are analysed in their landscape context to determine whether the larger enclosures are demonstrably different in aspects other than size, and if the smaller sites can justifiably be considered a continuum.

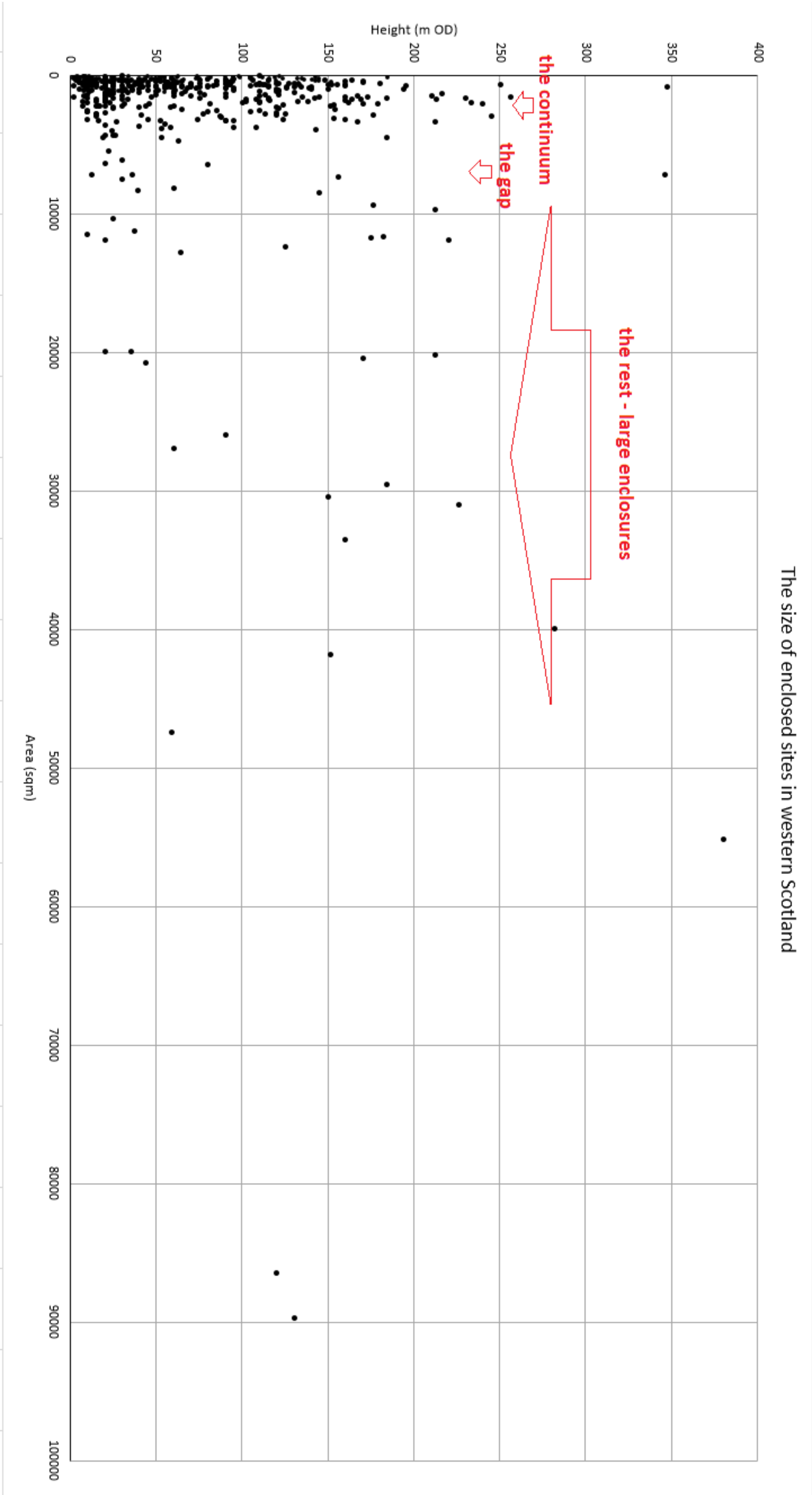

Figure 5.1: *Internal area of enclosed sites in Western Scotland, compared with height above sea level.*

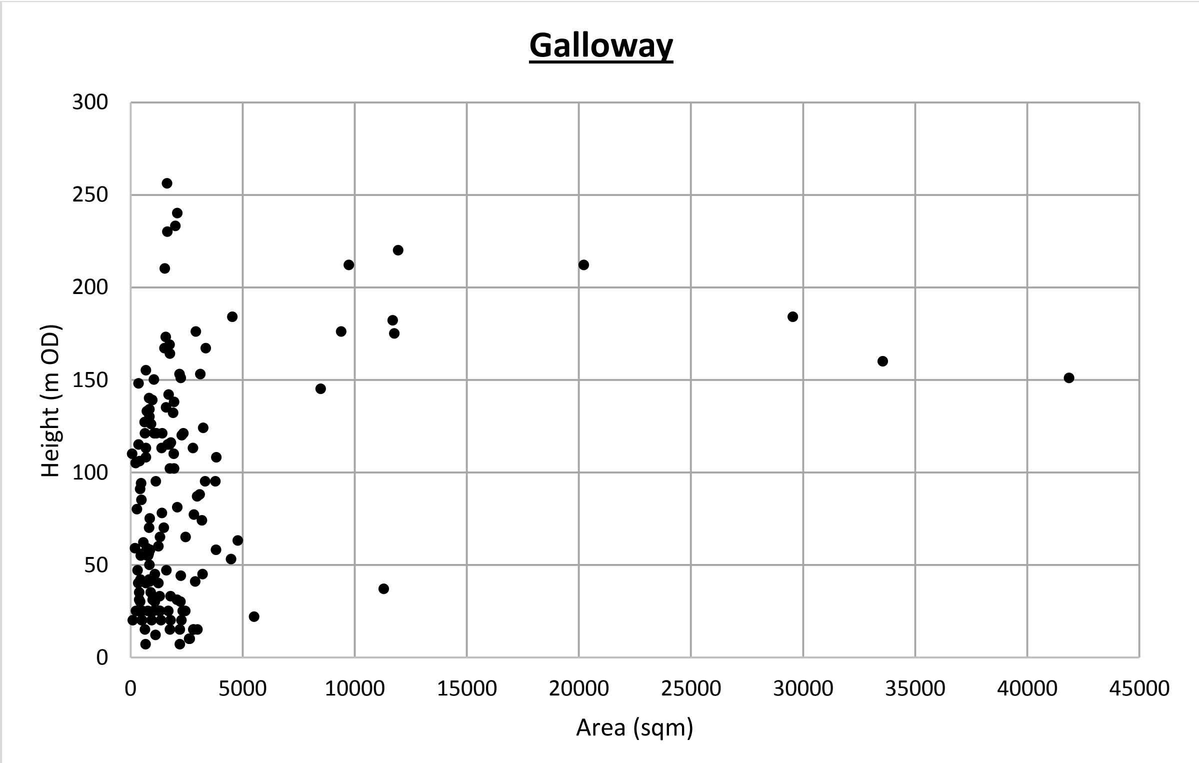

Figure 5.2: *Internal area of enclosed sites in Galloway, compared with height above sea level.*

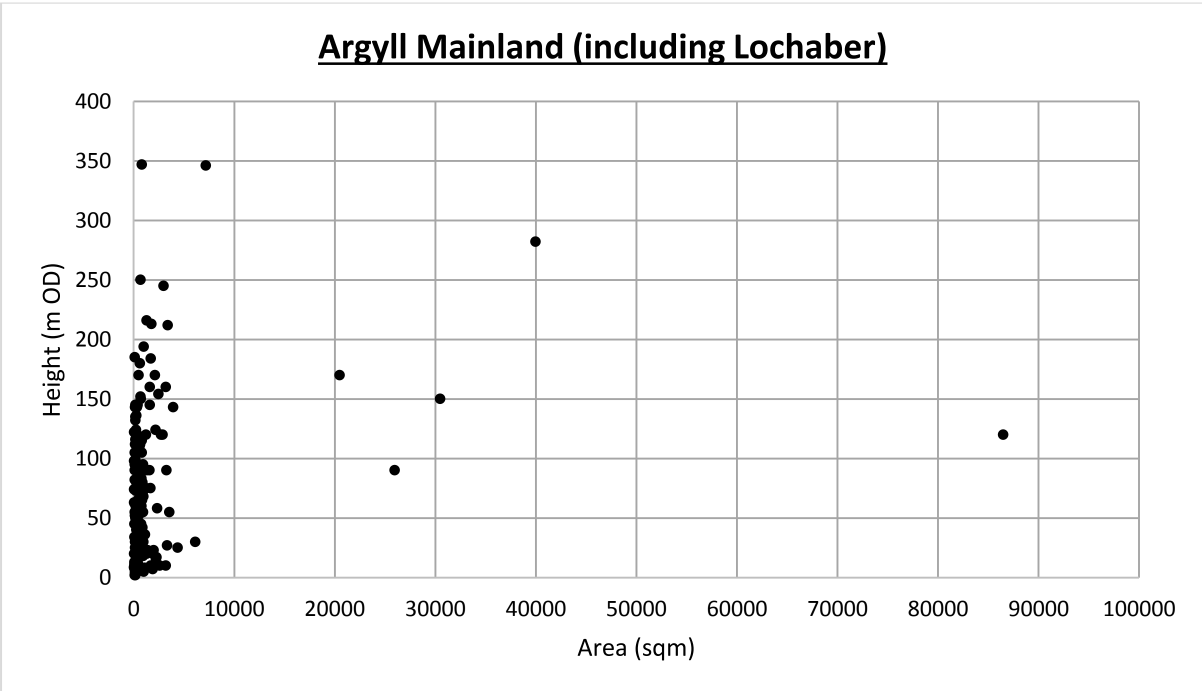

Figure 5.3: *Internal area of enclosed sites on the Argyll mainland, compared with height above sea level.*

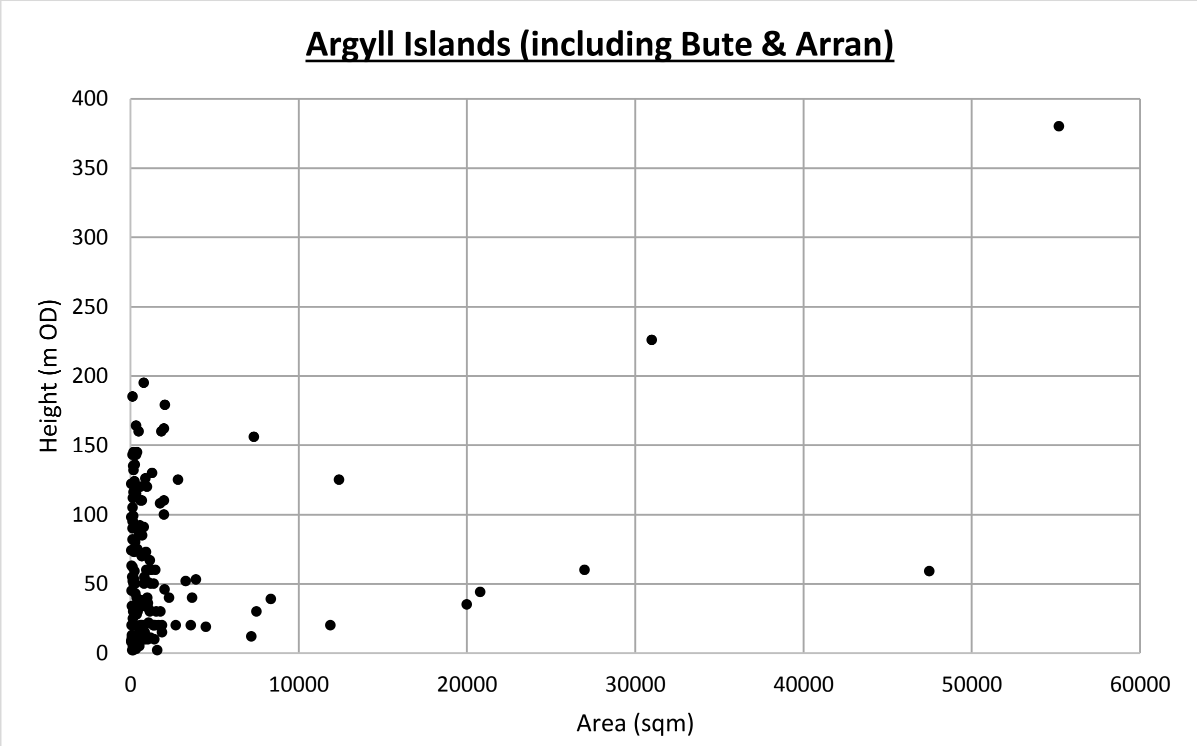

Figure 5.4: *Internal area of enclosed sites on the Inner Hebrides, Small Isles, Arran and Bute, compared with height above sea level.*

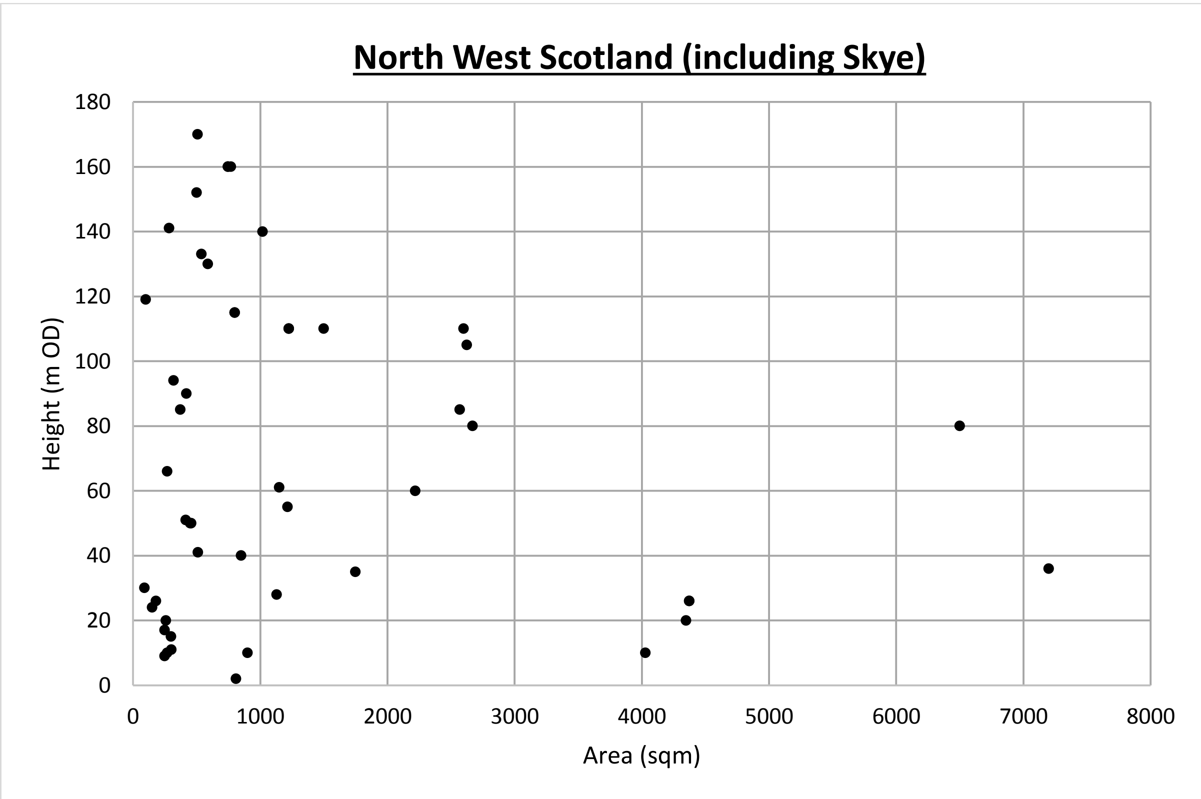

Figure 5.5: *Internal area of enclosed sites in North West Scotland, compared with height above sea level.*

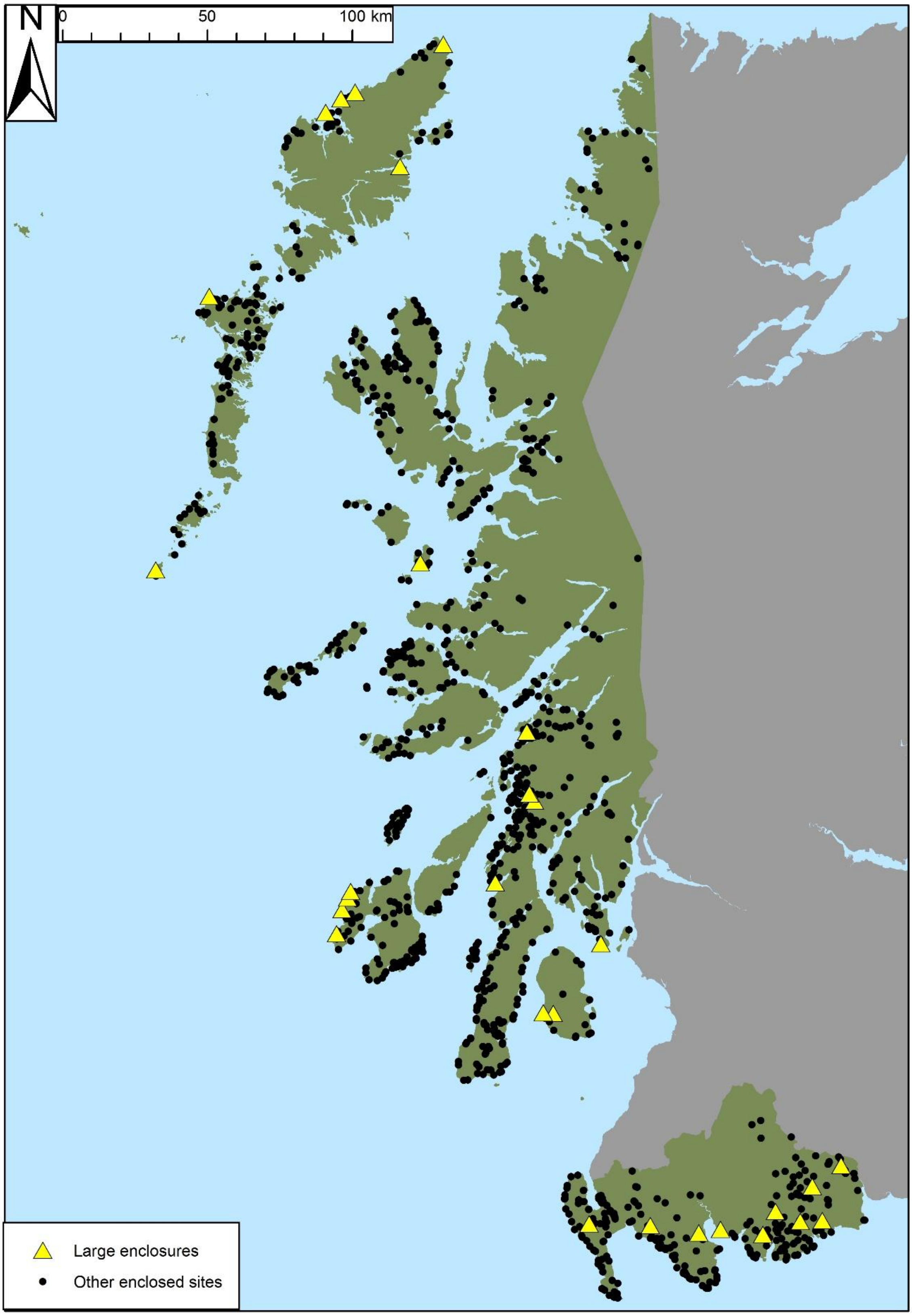

Figure 5.6: *Sites larger than the step-change in area (0.9 ha) across western Scotland.*

6. The methodology

6.1 Introduction.

In trying to analyse enclosed sites in Western Scotland a conventional GIS-based approach has not been attempted - that is to say the priority has not been to establish whether there were links between sites by calculating intervisibility, or to use predictive modelling to determine patterns in where sites may be found. The former, for this group of sites, is made less useful by lack of dating evidence. When sites may be separated in their use by a millennium what does intervisibility actually mean? If certain sites could see each other would that make it more likely that they were contemporary, part of the same social or political system, or would it suggest that new settlement sites were being constructed so that the forts of their ancestors could be seen? For Wheatley and Gillings (2000, 6) this is a central critique that can be levelled at many intervisibility studies, that sites ‘are investigated for visual patterning as if designed and executed according to a single, coherent plan’ when the sites themselves may ‘span many centuries’. Any interpretations derived from evidence of intervisibility among enclosed sites in western Scotland may be speculative, given the dating problems (Chapter 3.3) and therefore while this type of analysis has not been bypassed completely it has been given a low priority. The latter, predictive modelling, has been criticised for assuming that human behaviour is an automatic product of environment, and also for not working very well in practice (Wheatley 2004). Any attempt at predictive modelling of enclosed sites in Western Scotland would necessarily require much more information about site chronologies and much more certainty in site categorisations than is currently available, even if one argues that any potential benefits outweigh its theoretical deficiencies.

Instead, each site has been considered individually and its position in the landscape treated as a quality of the site itself, like its area or scale of defences. While other sites are also clearly a property of that landscape we simply do not know what was there or in use at a given time, and therefore sites have been investigated largely independently of each other. If ‘fort’ is a justifiable category of site separate from, for example, dun or settlement, then it is reasonable to propose that forts may be constructed in different positions in the landscape to sites that were conceived with a different purpose in mind (see Chapter 1.4). GIS is being used to question and investigate the monument categorisation itself, to determine if there is a correlation between RCAHMS classification or site size and landscape position and if all sites of that type or size fit that pattern. Are there outliers or archetypal ‘average’ sites and what does this mean? In a sense this is inspired by Llobera’s (2001) and Gillings’ (2012) works on affordances and the link between people and these affordances. Are sites of a specific morphology or size positioned so that people inhabiting them can perceive a particular quality of the landscape that may have had value to them, for example the best farming land or the sea? Have individuals or communities made a decision to take advantage of the greater topographic prominence of certain places to position larger or smaller, more heavily- or lightly-defended sites, and what might that potentially mean for those sites? Is it possible to redefine site categories rather than reaffirm them?

6.2 Objectives and methodological issues

The GIS-based analyses in these case studies were designed to empirically measure the relationship between enclosed sites and their environments. The accuracy and usefulness of this work rested on a number of factors. Firstly, the recreation of landscape topography had to be of a high quality. A 5 m resolution Ordnance Survey Digital Terrain Model (DTM) was used to underpin most analyses, in the absence of widespread, publicly available Scottish Lidar data. This DTM cannot be an exact reproduction of the later prehistoric landscape – natural and anthropogenic forces will have changed it somewhat – but it represents a more accurate foundation for visibility analyses than that used for most large-scale viewshed analyses to date (e.g. Bongers et al 2012; Garcia 2013; Gonçalves et al 2014). Secondly, the extents of the sites themselves had to be recreated. For many visibility analyses, using, for instance, a 50 m resolution DTM, this is not an issue – most sites do not exceed the size of a pixel. Given the high quality of the DTM used for these case studies, some of the largest enclosed sites might be the size of hundreds of pixels (e.g. Figure 6.2). Visibility to and from some of these pixels might be dramatically different to others. Thirdly, if agricultural land were to be involved in calculations, the best data possible needed to be used to attempt to recreate what land prehistoric people may have valued for cultivation or high quality pasture. For this, Land Capability for Agriculture mapping was used as an unideal, but least inaccurate, solution.

6.2.1 The depiction of each enclosed site

A series of points was used to recreate the size and scale of each enclosed site. Where a 1:2500 Ordnance Survey plan was available for a site it was used to create a manual log of the coordinates of a spot every 20-30 m along the ramparts of a site. Further points were taken in the interior of a site, on inner ramparts or across the area enclosed, again approximately 20-30 m apart with a final one roughly in the centre of the interior (Figure 6.1). This system was adopted as an attempt to best capture the visibility of large enclosed sites as objectively as possible. An analysis of the visibility from such a site would be a cumulative viewshed from all locations enclosed by it that had been selected. A series of points was considered to be a better approximation of assessing overall visibility from, for example, a large hilltop site than using a simple polyline around the outermost ramparts, as the outer ramparts in many cases are lower down the slopes of hills and thus considerably less visible than parts of the interior. If a 1:2500 OS plan was not available, satellite imagery such as Google Earth and Bing Satellite was used, employing the same system to identify a series of stations for measurements. If it was not clearly visible on satellite imagery and no 1:2500 OS plan was obtainable the site was not included in the analysis.

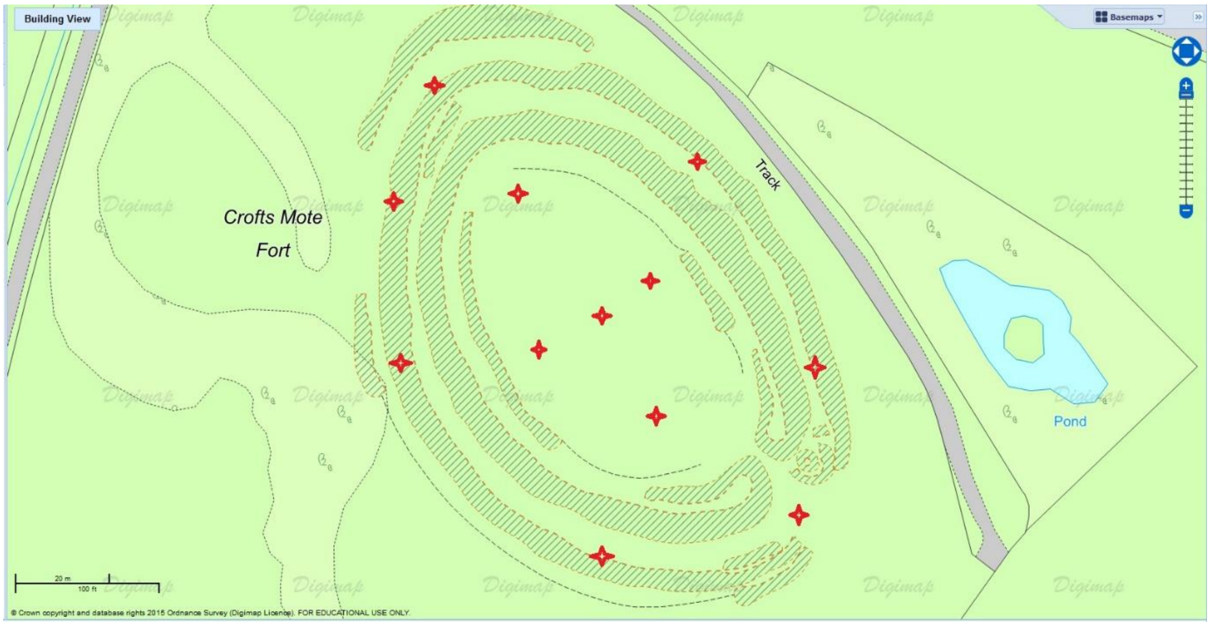

Figure 6.1: *Crofts Mote Fort, Galloway. Points used to best depict the site. Adapted from 1:2500 mapping used in OS Mastermap, available through Edina Digimap.*

6.2.2 The Digital Terrain Model (DTM)

The Digital Terrain Model (DTM) used as the basis for all GIS analysis in this thesis was OS Terrain 5 grid available through Edina Digimap (http://digimap.edina.ac.uk). This is a 5 m resolution DTM with a measured root mean square error (RMSE) of 2.5 m in rural areas supplied in ASCII grid format. It has been captured by photogrammetric methods as a triangulated area network or TIN which uses triangles to model the edges of features more accurately than a gridded system (Ordnance Survey 2013), and subsequently interpolated. For visibility analyses the accuracy of the DTM at representing terrain is vital, particularly its ability to model hilltops and crests, which impact visibility calculations far more than valley floors or sides of hills (Gillings & Wheatley 2000, 180). It has also been shown that different resolutions of DTM greatly affect the accuracy of visibility analyses, although there is no simple, predictable correlation between lower resolution DTMs and more inaccurate viewsheds (Wheatley & Gillings 2000, 8-9). In practice it matters far more that topographic features close to the observer are accurately modelled as opposed to those further away. OS Terrain 5 is the highest resolution DTM freely available that covers the entirety of the various study areas described below, with Lidar coverage at the time of study (2014) unevenly available, and provides a good balance between accuracy and processing time (Figure 6.3). Modern vegetation and buildings are not included in the DTM, although major roads are.

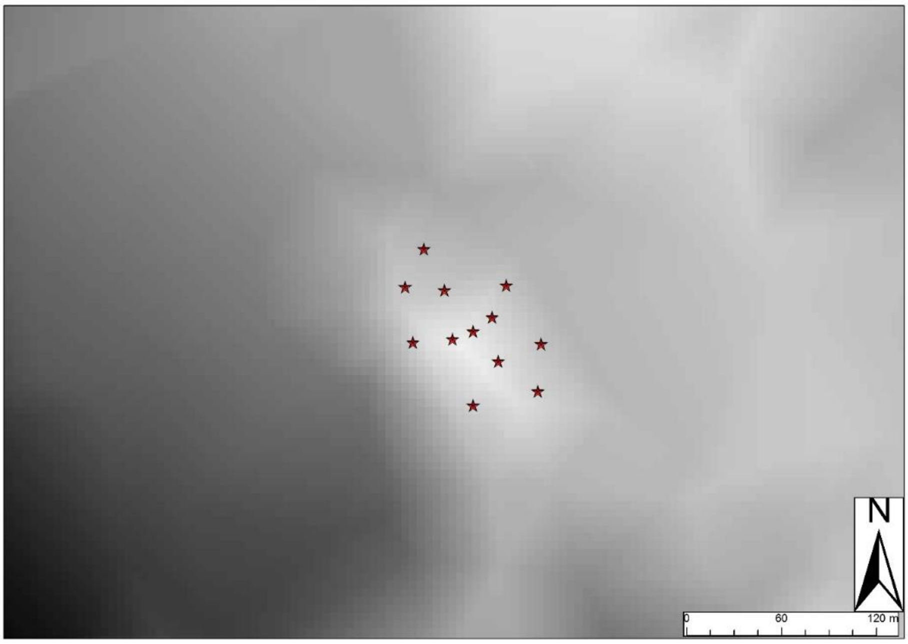

Figure 6.2: *OS Terrain 5 DTM with points depicting Crofts Mote Fort, showing tile size and DTM resolution compared to the size of the fort.*

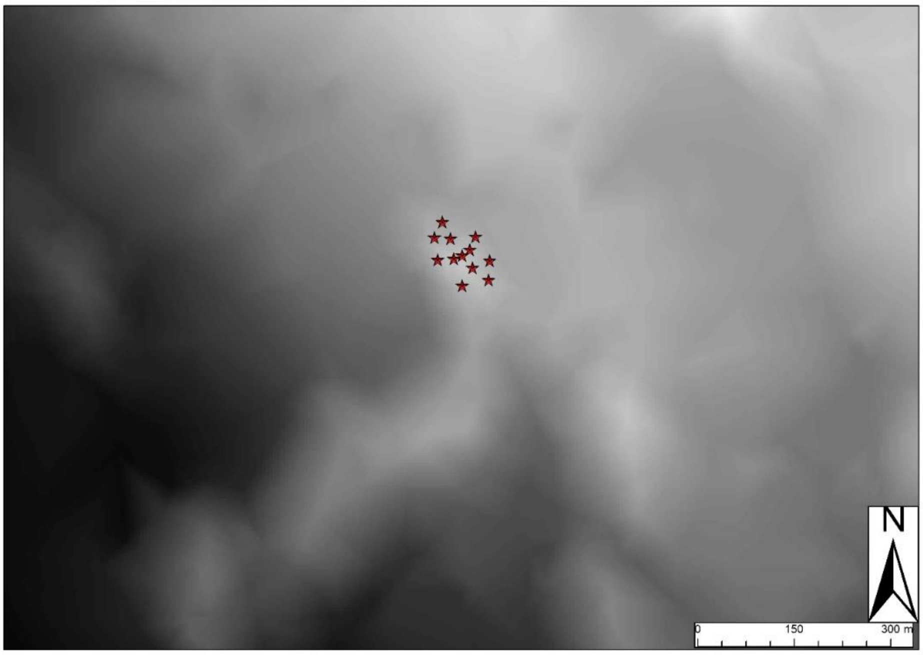

Figure 6.3: *Zoomed out view of OS Terrain 5 DTM's depiction of the landscape, showing terrain surrounding Crofts Mote fort.*

OS Terrain 5 depicts elevation data as far as the mean low water mark (Ordnance Survey 2013, 13), but areas of sea beyond this are given a z value representing the mean high/low water marks, often of below zero/sea level. Also the DTM data does not always stretch far enough into the sea to calculate complete viewsheds over the distance required. In order for the sea to be represented as accurately as possible, all sea tiles were removed from the DTM by extraction and a constant raster with a value of zero was added to simulate an even, sea-level, surface (Figure 6.4 & 6.5).

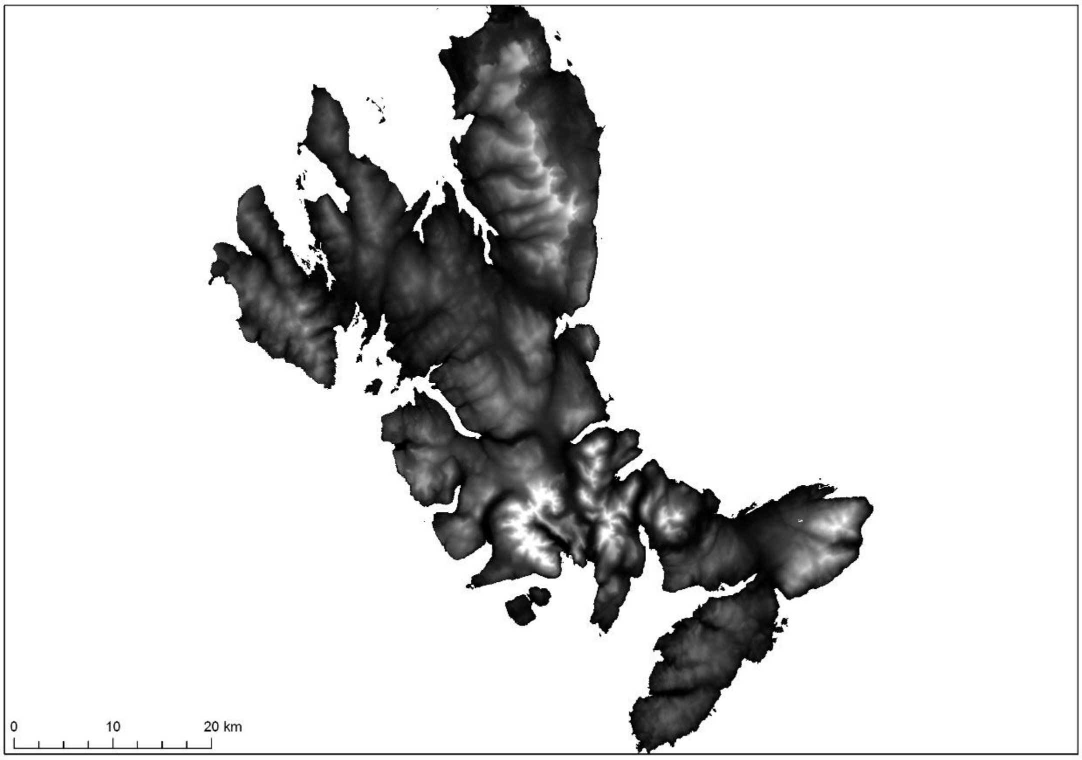

Figure 6.4: *DTM of Skye with all sea tiles removed.*

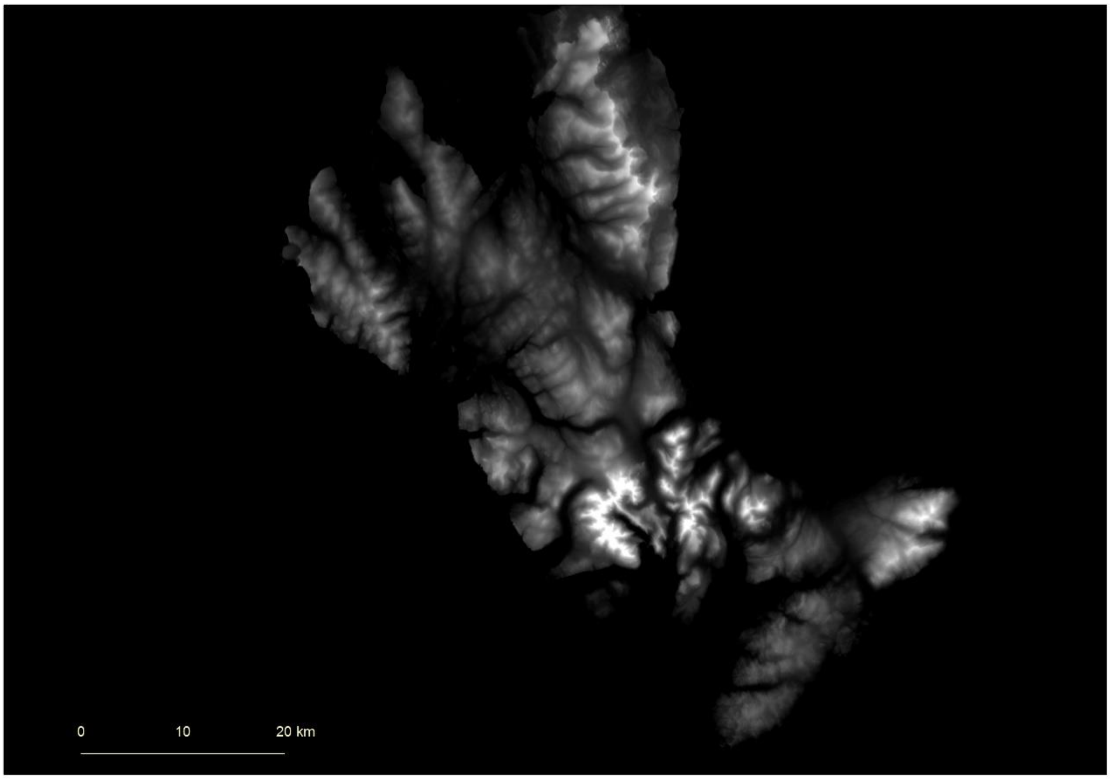

Figure 6.5: *DTM of Skye with constant raster (z value 0) added to represent sea.*

6.2.3. Land Capability Classification for Agriculture

6.2.3.1 Why use LCA mapping?

In using the Macaulay Land Use Research Institute Land Capability Classification for Agriculture (LCA) mapping to explore the relationships between sites and agricultural land no assertion is being made that it represents a completely accurate portrayal of which land Iron Age farming communities may have most valued. Yet in Western Scotland where, in most places, agricultural land is at a premium, any patterns in site location relative to the limited farming land that is present are potentially interesting. Indeed it is possible that access to areas of favourable agricultural may have been a prerequisite for permanent occupation of a place (e.g. Nieke 1990, 135-139; Johnston 2008, 273). The Land Capability Classification for Agriculture is the most powerful tool available as of the time this thesis was completed to make that connection between people and agricultural land. Complete and accurate reconstructions of past soils and climate remain fragmentary, and the LCA assessments are calculated on the basis of largely unchanging characteristics of the land, albeit modified for modern farming techniques (Davidson & Carter 1997, 52). It can be argued that the best land in the West now probably corresponds roughly to the best land two millennia ago, specifically in the case of those areas with significant till or glaciofluvial deposits such as southern Kintyre or the Rhinns of Galloway (Ballantyne & Dawson 1997, 31), despite the probability that the requirements of farmers may have changed somewhat.

The LCA ranks land from 1 (best) to 7 (worst) using a number of criteria: climate, gradient, soil, wetness, erosion, pattern and vegetation (Bibby et al 1991, 2-10), with the fertility of the soil itself just one of many factors relating to its ranking. To ascertain whether the climatic element of the ranking is relevant to prehistory some insight into later prehistoric climatic conditions is needed. The traditional view is that the period from about 3800-600BC experienced warmer temperatures than today with a fall in temperature sometime after 600BC, however this is now viewed as overly simplistic. Certain archaeologists have equated the abandonment of upland landscapes in Britain with severe climatic deterioration around 1100BC related to volcanic activity in Iceland (Burgess 1995, 145), described as an ‘overambitious’ explanation by Tipping (2002, 15). Tipping et al’s (2012, 12-13) summary of current climatic evidence for the Iron Age emphasises the complexity of the data: summer temperatures in Scotland in the period being described as slightly warmer than today, with possible increased storminess, but some evidence for falling temperatures with extreme variability between about 400BC and 400AD. The evidence for climate change does not fit neatly with an identified slowdown in settlement expansion in Britain and Ireland between 800 and 500BC (*Ibid*, 14). All climate data used by the LCA was gathered between 1958 and 1978 and takes account of such factors as exposure to sunlight and exposure to wind that are largely topographically determined and will only have changed markedly if the topography itself has changed.

Gradient is a criterion where the priorities of pre-Improvement agriculturalists will have varied greatly from modern farmers. The LCA specifies a maximum slope limit of 15 degrees for arable land defined largely on the ability of machinery to traverse the ground (Bibby et al1991, 32). This, of course, is unlikely to have been a consideration for prehistoric farmers, or even earlier post medieval farmers, indeed in some cases the freely draining nature of such locations may have been preferable to flat, poorly drained lowland soils that only became usable with more recent developments in artificial drainage. Gradient, then, is the aspect of the LCA that is least relevant to the period in question, albeit flatter land is generally likely to be more convenient to farm, and less susceptible to erosion than steeper sectors.

The history of the fertility of soil itself in Scotland is complex. The broad outlines of which parts of the country are more or less agriculturally productive was laid down at the end of the last Ice Age and relate to the relationship between deposition of till and the type of underlying rock (Davidson & Carter 1997, 56). These tills and fertile glaciofluvial deposits are widespread in the Scottish lowlands but rare and confined to valley floors in the western highlands and islands (Ballantyne & Dawson 1997, 30) and their fertility has depended on many natural and human-induced factors, including the acidity of the parent rock itself (Miles 1994, 146). Initially free-draining tills may have suffered from leaching of minerals and suffered podzolisation, while poorly-draining soils are likely to have undergone the combination of gleying and leaching leading to the possible natural formation of peat, both processes greatly detrimentally affecting the productivity of the soil. These processes have been at work naturally on soil profiles since the end of the last glaciation, however by the time Neolithic farmers arrived soils had been under development for over four thousand years and according to Davidson & Carter (1997, 57) ‘the present-day pattern of soils in Scotland had been established’ by that date.

Since the first farmers arrived the intensification of anthropogenic activity has had a significant effect on soils, and contributed both positively and (mostly) negatively to their fertility. A large decline in woodland cover occurred in Scotland from the Neolithic period onwards, perhaps representing the clearing of land for agriculture. A major elm decline took place roughly between 3300 and 2850BC for which one possible cause is human activity (Tipping 1994, 18-25). Pine trees, that had previously flourished in Northern Scotland, severely dropped in population between 2000 and 1800BC (*Ibid*, 26-27), while in Argyll likely human induced clearances of birch, hazel and oak are visible in the palynological record from 2600BC onwards (*Ibid*, 27-28). In the Western Isles the majority of woodland may have been cleared by around 600BC (Armit 1996, 6-7). The removal of tree cover exposed soils to erosion and probably increased leaching and surface wetness (Ballantyne & Dawson 1997, 41; Davidson & Carter 1997, 57). The replacement of trees with heather as dominant vegetation has contributed to the acidification of much of Scotland's soils and also contributed greatly to the spread of blanket peat (Miles 1994, 152).

One reason given for the abandonment of upland landscapes in later Bronze Age Scotland has been human-induced soil degradation due to nutrient depletion caused by overly intensive farming (Davidson & Simpson 1994, 66). Yet the survival of prehistoric settlement sites and field systems in upland areas that are today under peat cover provides support for the theory that peat growth was held back by land management strategies such as fertilisation, or simply through cultivating the soil. Manuring was used at Tofts Ness on Orkney from the Neolithic to the early Bronze Age as a response to podzolisation (*Ibid*, 71-2). Organic fertilisers were also used on podzols at Lairg in Sutherland between 2200-320BC (Davidson & Carter 1997, 60). Continued disturbance of the soil through cultivation also prevents waterlogged conditions or surface-water gleying that is an essential precursor to peat formation. Thus the spread of blanket peat across previously cultivated upland landscapes is likely to be more a cause of the abandonment of those landscapes than a consequence of human exploitation (*Ibid*, 56-61).

While soils have clearly been greatly modified by anthropogenic activity since the first millennium BC it can certainly be argued that, as a generalisation, the best agricultural soils have been maintained, cultivated and managed while more marginal upland soils have largely deteriorated. As a consequence, the difference between most fertile and least fertile soils has probably increased, yet the best agricultural areas in Western Scotland in later prehistory likely remain the best agricultural areas today and comprise those regions where glacial till was laid down at the end of the Devensian period, particularly areas of freely-drained soils. Indeed, much of the large-scale soil change that has occurred may have done so prior to the Iron Age. Out of seven buried soils recorded in Scotland from the mid Iron Age or later listed by Davidson and Carter (1997, 54) five had stayed the same in character today (i.e. remained podzols or brown forest soils), one had changed from a podzol to a peaty podzol and one had improved from a podzol to a brown forest soil. In contrast, of the eleven buried soils that dated from before roughly 800BC nine had since deteriorated from brown forest soil to a modern-day podzol or podzol to peat or similar.

Land Capability Classification for Agriculture mapping cannot take into account the changing priorities or standards of agriculturalists at various times in the past, for example the probable acceptance by past subsistence farmers of lower or less reliable crop yields compared to today, and the resultant cultivation of land deemed by the LCA as presently unsuitable for arable. For Davidson and Carter (1997, 52-3) this is the reason for the significant presence and survival of past settlement in land graded 5 by the LCA which forms a fringe around current arable land, rather than climate change or deteriorating soil conditions. While the LCA is far from a perfect recreation of what conditions or areas prehistoric farmers may have most valued it is the best representation that we have and valuable if interpretations based upon it are made with care. For the purposes of this study it has been used as a necessarily blunt tool to observe patterns in site position at a macroscale and not to make detailed high resolution interpretations of specific sites.

6.2.3.2 LCA mapping in practice

The Land Capability Classification for Agriculture data have been made available by the Scottish Government and the James Hutton Institute at 1:25000 and 1:250000 scale in shapefile or .csv format. In this case it was downloaded at 1:25000 as a series of shapefiles and converted to a raster in ArcGIS. In order to analyse the survival of different types of monument on specific types of land the number of surviving enclosed sites on each land designation was counted and compared to the area of actual land falling into that category. To examine the more complex relationships between sites and nearby farming land the LCA raster was reclassified into two categories; agricultural and non-agricultural land (e.g. Figure 6.6). This reclassification was beneficial as it simplified the LCA enough so that the results of calculations over hundreds of sites in GIS would be clear. In addition, the subtle differences between land rated 3.1 and 3.2 today, for instance, may be largely topographically determined and of less use for studying later prehistory than making a broad categorisation of best land, marginal land and land of probable lesser agricultural value. The decision about at what LCA ranking the dividing line between agricultural land non-agricultural land would fall was partly arbitrary, but an attempt was made to add some interpretive rigour to the classification by using RCAHMS Land Use Assessment mapping. This was a project that between 1997 and 2015 digitally recorded land use across Scotland, including areas of prehistoric or medieval farming and settlement. It was observed that all land currently used for agricultural purposes plus prehistoric and medieval farming remains covered a similar area to land classed 5.2 or better by the LCA. A decision was therefore made to define all land at or above that rating as agricultural land, for the purposes of the case studies in this thesis. LCA mapping was reclassified as 1000 for agricultural or 0 for non-agricultural land (Table 6.1).

LCA Classification	Reclassed as
1	1000
2	1000
3.1	1000
3.2	1000
4.1	1000
4.2	1000
5.1	1000
5.2	1000
5.3	0
6.1	0
6.2	0
6.3	0

Table 6.1: *Reclassification of LCA mapping into agricultural (1000) and non-agricultural (0).*

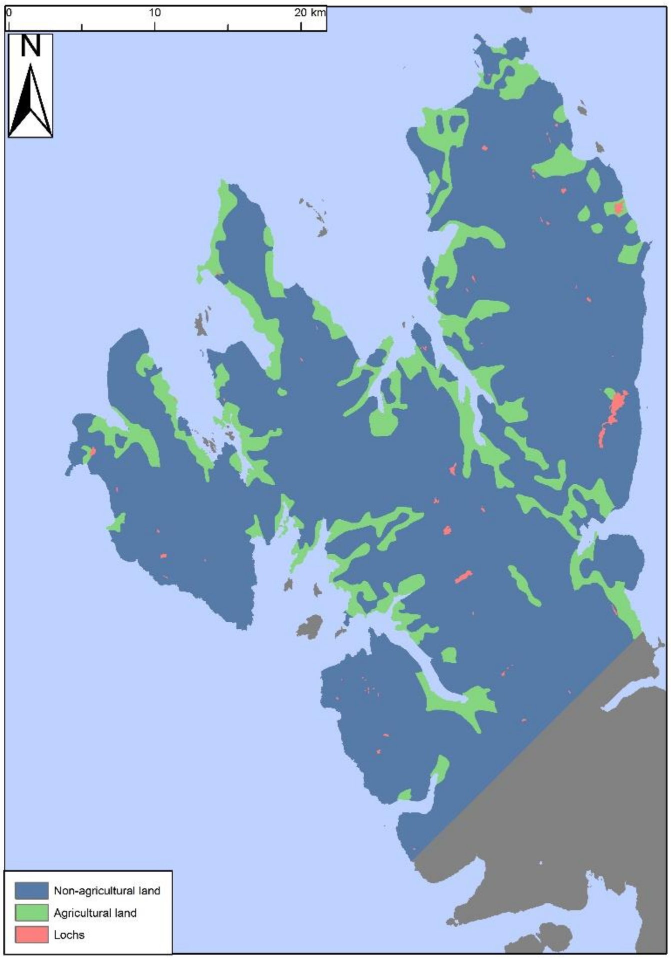

Figure 6.6: *LCA mapping for northern Skye reclassified into agricultural and non-agricultural land.*

6.3 <u>The Methodology</u>

6.3.1 Data analysis

Data from the GIS-based analyses described below was collected and tabulated. Scatter charts were created in Microsoft Excel comparing the internal area, the RCAHMS categorisation, and the morphology of sites with the GIS data. Site area was depicted on the X axis, the GIS-generated information on the Y axis and other site characteristics by different symbols. Patterns and groupings in the data were then observed and were selected for statistical testing. Using this method, hypotheses about relationships between site type and site location were identified and tested. Individual sites that fitted into the groupings were also distinguished.

Statistical testing was carried out using a non-parametric test known as a two sample *Kolmogorov-Smirnov* (K-S) test. A non-parametric test is one that does not rely on a predefined normal distribution in the sets of numbers being tested. A two sample test is one where there are two datasets, as opposed to one dataset being compared against a control population. The K-S test is also called a 'goodness of fit' test and can be used to determine whether two sets of data are taken from the same overall population (Connolly & Lake 2006, 130-133). The two sets of data being examined are converted to cumulative distributions, and the largest difference between the samples (*D*) is compared to the largest difference that should result if the datasets were drawn from the same population. A *P* value, or the likelihood that the datasets are drawn from the same population, is then computed by measuring the *D* statistic against a table of critical values representing a normal distribution if the datasets come from the same overall population. The *P* value resulting will be somewhere between 0 and 1, with the samples more likely to differ the closer the value is to 0. The line graphs depicting the K-S test results show the cumulative values of the two datasets being tested, from the lowest values in both samples in the bottom left corner, to the highest in the top right, and were generated by a calculator at http://www.physics.csbsju.edu/stats/KS-test.html.

The null hypothesis is that the two datasets are drawn from the same population and the result of the test is binary, i.e. the null hypothesis is either accepted or rejected. This is determined by calculating whether the difference between the two samples is significant, with much current literature setting this difference at $p=0.05$, with an inferred confidence level of 95% (e.g. Garcia 2013; Gonçalves et al 2014, 133). If the p value is greater than 0.05 then the null hypothesis must be accepted – the two datasets are part of the same distribution.

The K-S test is particularly suited to the kinds of data generated by the GIS-based analyses in this thesis because it does not rely on the two datasets being normally distributed. It does not rely on putting data into groups or 'bins' like the similarly non-parametric chi-squared test (Connolly & Lake 2006, 123-7) – early binning of the data generated in this thesis would add a layer of unnecessary subjective analysis to the investigation before any testing occurred.

6.3.2 Calculating distance from the coast and altitude.

To analyse any patterning in the nearness of sites to the coast a polyline was drawn in ArcGIS following the coastline of the given case study area. Euclidean distance from that line was calculated creating a new raster with the value of each square in the raster being its distance from that line. All squares in this raster outside the polyline, i.e. in the sea, were removed by extraction and the final raster was recategorised into several bands of 1 km width (Figure 6.7). These categories varied according to the particular case study area, for instance for Kirkcudbrightshire with its many promontory forts the distance category closest to the sea was subdivided in order to distinguish between sites near to the sea and sites actually on the coast. The results were analysed in two ways. Which distance category each site fell into was recorded and the relationship between percentage of sites and percentage of land falling into specific distance categories was compared using bar graphs (Figure 6.8). Assuming a null hypothesis between proportion of sites and proportion of land allowed determination of whether coastal or inland locations were particularly favoured for the positioning of sites.

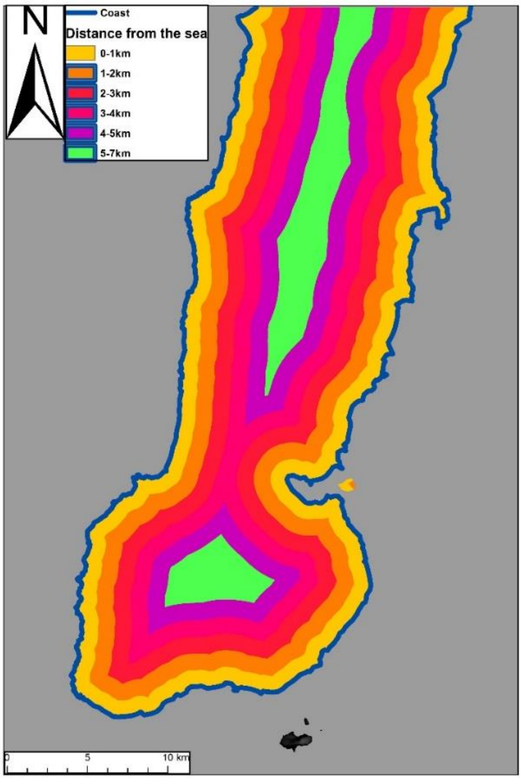

Figure 6.7: *Map of southern Kintyre showing Euclidean distance from the sea. The polyline representing the coast is shown in blue. The sea itself is shown in grey. The land has been categorised into five coloured sections, each representing a certain distance from the sea.*

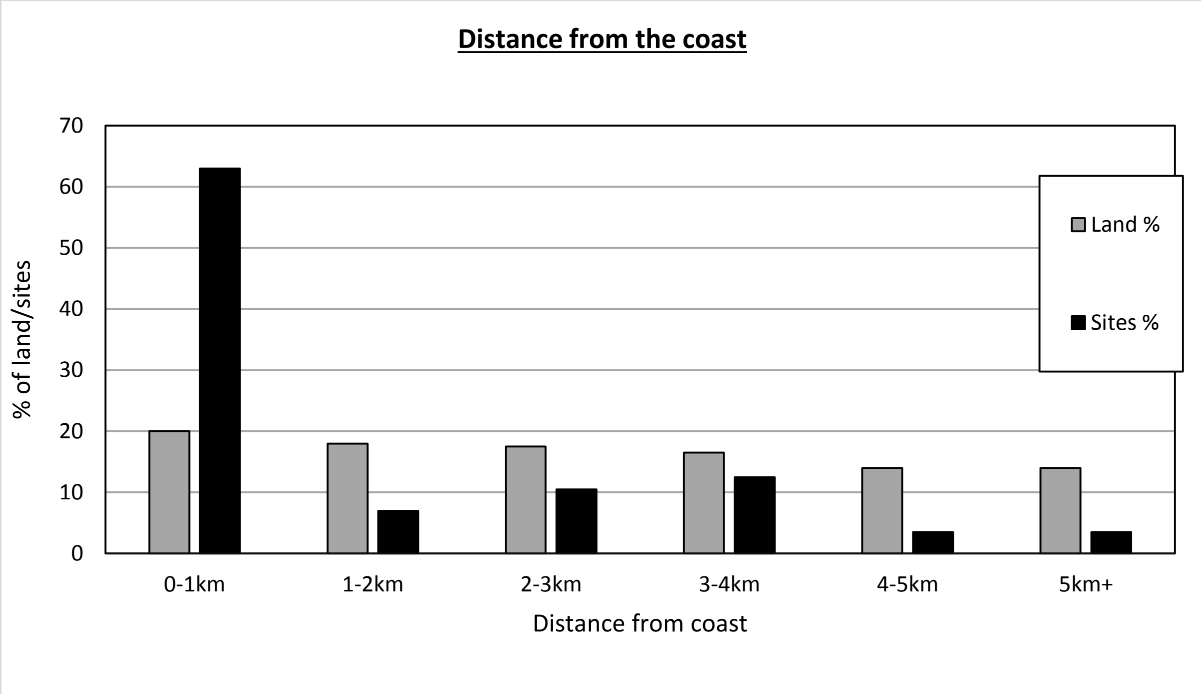

Figure 6.8: *Proportion of land and sites in Kintyre falling into each distance category.*

Secondly the height of sites and their internal area were compared using scatter charts and K-S testing as described in section 6.3.1 above.

Height above sea level of all sites was analysed in a similar way to distance from the coast. The highest pixel in the interior of each enclosed site was used to define its altitude, as the best approximation of its prominence.

6.3.3 The landscape visibility of sites using a cumulative viewshed

A cumulative viewshed was used to calculate the visibility from land of each 5 m by 5 m tile in the three case study areas. Randomly generated points were created by ArcGIS and used as the basis for the study (Figure 6.9). 1500 points were used for Kintyre, 2500 for Skye and 4000 for Kirkcudbrightshire, reflecting the comparative areas of the three case studies (Figure 6.9). Another option would have been to do a total viewshed of each case study region (cf. Llobera et al 2010), i.e. a viewshed from every single pixel in the DTM, but without extreme computer processing power such an undertaking would have been extremely time inefficient and probably impracticable. As such, a large number of random points was used as a compromise between accuracy and time. Each of the random points was given a Radius2 value of 10000, meaning that the maximum distance of the viewshed from each point was 10000 m. This was done to approximate the maximum distance from which a site might be clearly seen by the human eye, although it is an estimated distance rather than empirically proven – visible distance depends greatly on weather conditions or the visual acuity of the individual. ArcGIS rated each tile in the landscape by how many of the random points could see it, thereby ranking the landscape into more and less visible regions (Figure 6.10). The cumulative viewshed method, while not quite as accurate in reconstructing visibility as a total viewshed, does reliably determine which specific areas are more and less inherently visible in the landscape. The author then observed and recorded how many of the random points could see 5 m by 5 m tiles within and on the defences of sites. As enclosed sites generally incorporated very many tiles two different ways of measuring the sites' visibility ratings were used:

- The mean visibility of all tiles representing the land occupied by the site. This was determined in order to more accurately estimate whether sites were positioned in places that were especially visible in the landscape. Using the mean visibility of the footprint of a site allows fair comparison between that area and the mean visibility of the landscape. Instead using the most visible pixel in its interior would add considerable bias to any statistical comparisons.
- The most visible tile enclosed. While the mean visibility of the interior is useful for determining whether a site is placed in a more visible position than average in the landscape, it is not as especially accurate depiction of the visibility of the site itself. Enclosed sites are larger than a 5 m by 5 m pixel, and this contributes to their visibility. Comparing the most visible pixel enclosed by sites allows analysis of the actual visibility of the site in the landscape relative to other enclosed sites.

The visibility of different categories, or sizes of site or sites with particular characteristics could then be compared with the mean value for the landscape, or with the mean value for the landscape above or below a certain height, and with other enclosed sites using the methods described in section 6.3.1.

A potential problem associated with this kind of study is the 'edge effect' – that is the DTM used must have an edge, and unless the case study area is an island then that edge will not exist in reality. Sites close to this artificial line, i.e. the edge of the DTM, will be visible from fewer randomly generated points compared to those closer to the centre. To mitigate this, the random points and the DEM were continued approximately 10 km beyond the boundaries of the case study area, and the consequences of this edge effect on the visibility rating of any one site were mitigated (Figure 6.9.

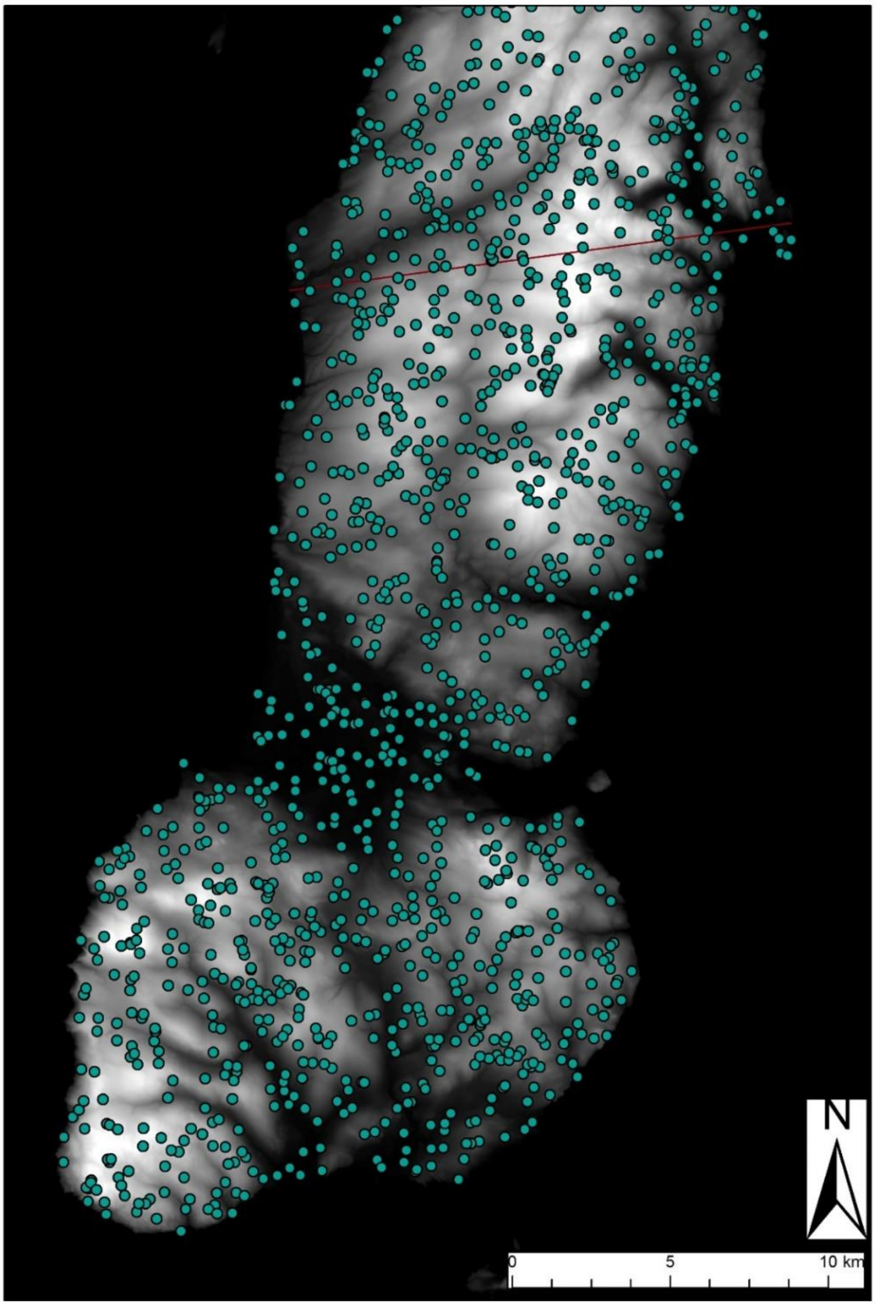

Figure 6.9: *1500 randomly-generated points used for Kintyre land cumulative viewshed, overlaid on 5 m DTM. Points continue north of the red line, which represents the edge of the case study area, to counter the edge effect problem.*

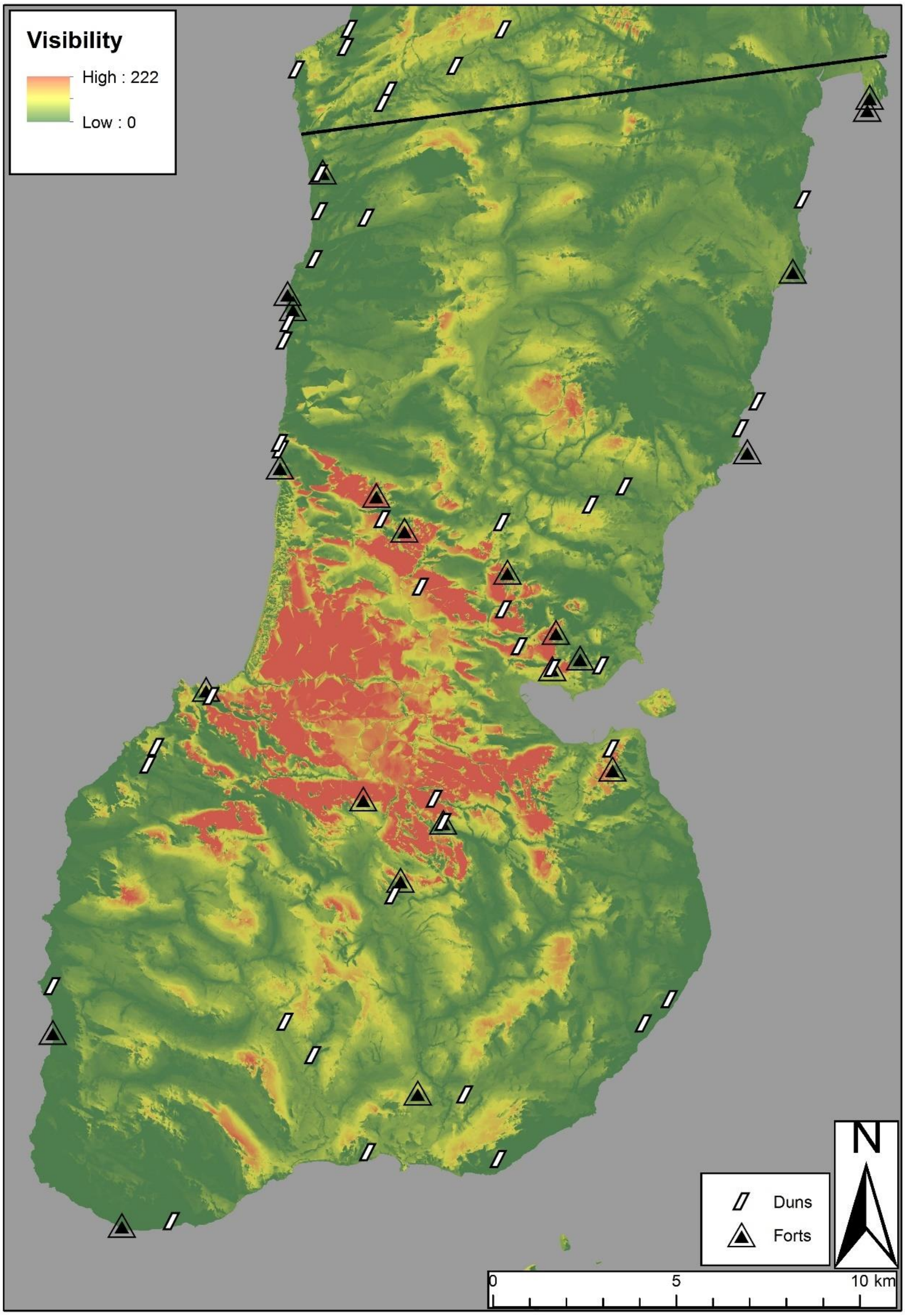

Figure 6.10: *Land in Kintyre graded by number of randomly-generated points that can see it, with enclosed sites.*

The visibility of sites from the sea was also calculated using a cumulative viewshed (Figure 6.11). 1500 random sea points were generated in the Kintyre case study, and 2000 for Skye and Kirkcudbrightshire. These points were created up to 15000 m from land and the Radius2 value for each was set to 15000, meaning that the maximum distance of the viewshed from each point was 15000 m. This was utilised to explore whether coastal sites were visible from a long distance out to sea. The results were subsequently assessed using the methods outlined in section 6.3.1.

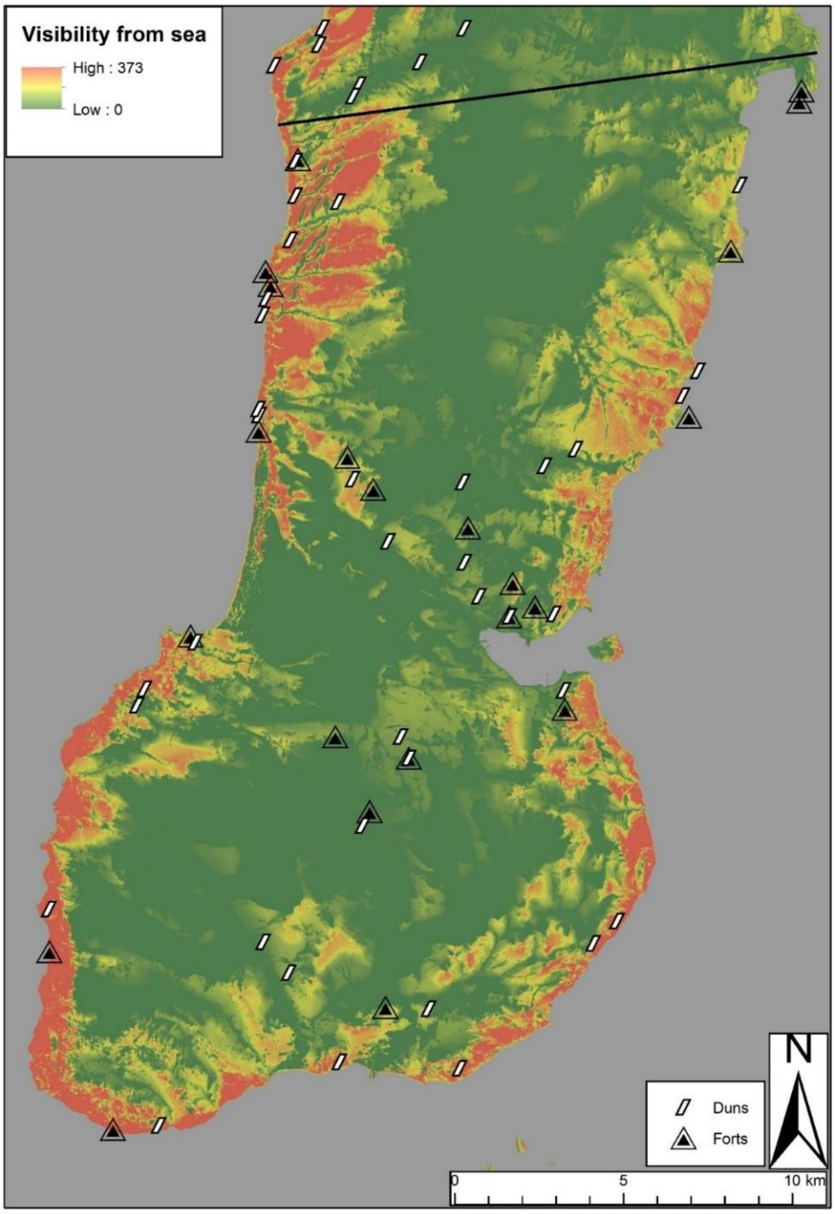

Figure 6.11: *Land in Kintyre graded by number of randomly-generated points that can see it from sea, with enclosed sites.*

6.3.4 Individual site analyses

Each site was analysed within a series of specified radii for topographic and visibility analyses, the radius taken from the centre point of each enclosure. For topographic analysis sites were examined over 10 km, 5 km, 1 km and 200 m distances, for visibility analyses 10 km, 5 km and 1 km – the 200 m distance was deemed useful to determine whether sites were overlooked by land, but visibility statistics over that distance would arguably show little about the character of the site that the 1 km distance could not. The radii chosen broadly represented a region (10 km), a local area (5 km) and the immediate environs of a site (1 km). Equally, the three categories may approximate the long-distance, middle-distance and short-distance views defined by Higuchi as to how humans perceive a given view (1983, 13-14). The distance visible by the human eye depends on topography, weather conditions and the visual aptitude of the observer. A 5 km maximum distance was used by Gonçalves et al (2014) for their visibility studies of Mesolithic shell middens in Central Portugal and by Bongers et al (2012) for their analysis of chullpas in the western Lake Titicaca basin while Garcia (2012) preferred a 10 km radius for his study of Palaeolithic sites in Cantabria. Given that many of the later prehistoric enclosed sites in western Scotland may have been monumental in size and visible from a long way away 10 km has been used as the maximum distance for this study. The radii included in the case study chapters has been selectively chosen to be informative – not all distances have been used, for instance the patterns visible in the graphed results of 10 km viewsheds from sites tends to be very similar to the cumulative viewshed data.

6.3.4.1 Relative height and topographic prominence

The importance of topographic prominence is rooted in an association between height and power. Metaphors for ‘above’ and ‘below’ have been made for thousands of years – Tilley notably quoted Aristotle in associating ‘above’ with fire and light, and ‘below’ with heaviness and earth (2004, 5-6). High places have commonly been connected with the sky, with ceremonial power – there are many sacred mountains but few sacred valleys. In contrast lower places have often been associated with darkness and death (*Ibid*). In archaeology, height or prominence relative to surroundings is justifiably seen as a way to approach issues about hierarchy of settlements, or the significance of sites within a landscape.

Topographic prominence has been described as the amount of an individual's surroundings that are above and below him or her, or for practical purposes, the proportion of nearby area that lies below an individual within a certain distance (Llobera 2001, 1007). Prominence, of course, has visual connotations also, based on how visible a location is and how obvious the object, site or individual is, the former being undeniably but not proportionally linked to relative height. A more topographically prominent object is likely to be higher relative to its surroundings and lines of sight to that object are less likely to be blocked by surrounding land, but the relationship between topography and visibility is not predictable or measurable. Modelling the overall prominence of a site in the landscape should arguably incorporate data about both topographic prominence and visibility. While theoretically a kind of 'prominence index' incorporating relative height, visibility of location and visibility of object may be the most complete way to calculate the prominence of an object, the usefulness of such an index rests heavily on being able to recreate the size and scale of the monuments themselves, something that is not really possible for most enclosed sites in Western Scotland. As a result, relative height and visibility will be calculated separately and only brought together in later discussion.

To determine the height of a site relative to its surroundings the maximum height above sea level of the site itself was observed using the DTM in ArcGIS. The DTM was then reclassified into all land above or below the site's height within the four radii of 10 km, 5 km, 1 km and 200 m (Figure 6.12). As mentioned above, the height of the site relative to its surroundings within each radius should theoretically reveal different things about the topographic prominence of sites. Relative height within 10 km would determine whether a monument was situated in a topographically higher location within its wider region. It should be possible to calculate whether a site was prominent within its local area from the 5 km radius, among the landscape whose inhabitants may have had habitual contact with the site or could perceive it directly i.e. the distance of a one hour walk. Greater relative height within 1 km should show information about the site's relationship with the land that it was directly associated with on a daily basis. Higher prominence within this distance may also have had defensive connotations, allowing inhabitants of the site to better observe their surroundings and reducing the opportunity for outsiders to observe the interior of the enclosure. This may be even truer for the 200 m distance - determining the height of a site relative to its surroundings over this distance could allow identification of sites with military weaknesses, the supposition being that sites with more ground higher than the site within that distance are less likely to be military in nature. The Chesters in East Lothian is one such site where the defensibility of a fort has been called into question because of adjacent higher land (Bowden & McOmish 1987, 78). Once the DTM was reclassified the percentage of each radius now classed as below the site was calculated and the results were graphed and statistically analysed as detailed in section 6.3.1.

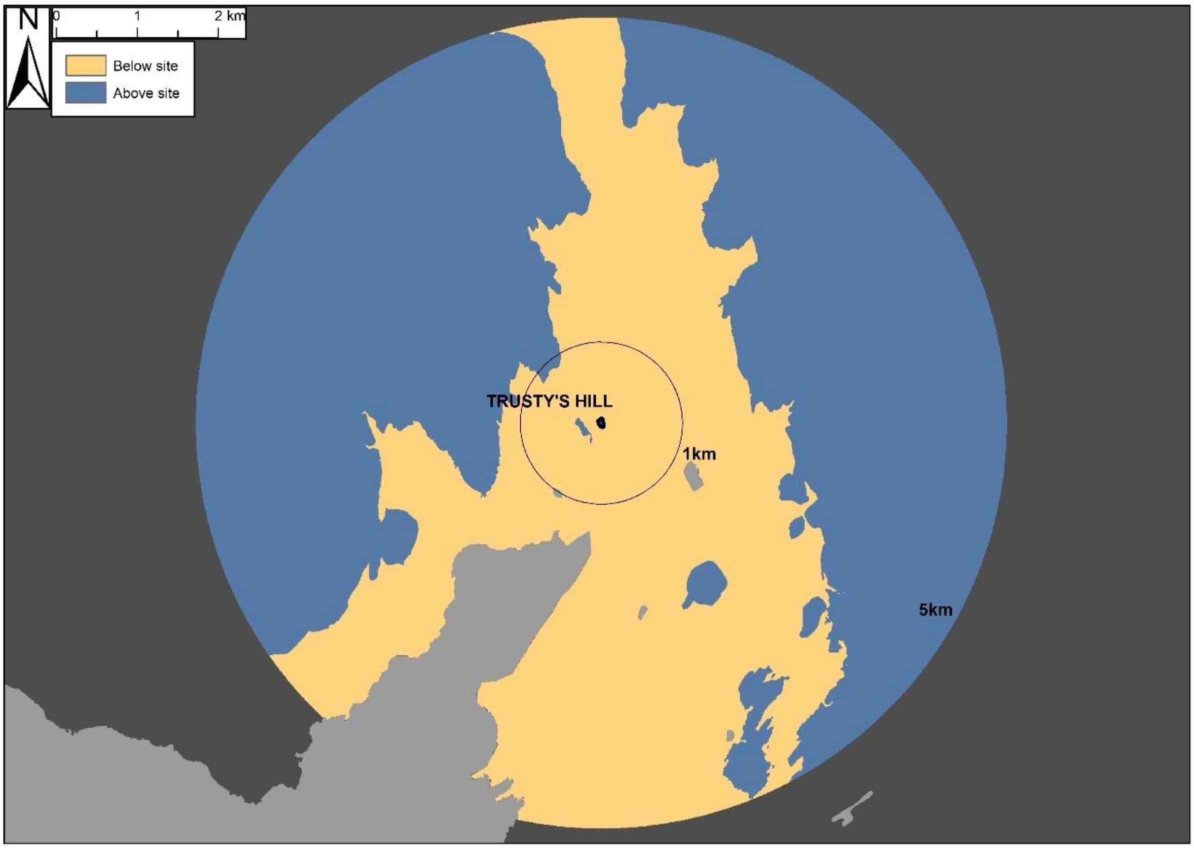

Figure 6.12: *Land surrounding Trusty's Hill in Kirkcudbrightshire classified by whether it is above or below the site within 5 km and 1 km radii.*

6.3.4.2 Visibility from sites

Among the criticisms made of GIS-based visibility analyses are methodological issues related to accurately capturing human vision. One problem is that characteristics of how the DTM has been interpolated, i.e. how the spot heights used in its creation were turned into a continuous surface, and how the data for it has been gathered will inevitably alter the results of a viewshed. Among a number of critiques listed by Wheatley and Gillings (2000) is the inability to reconstruct palaeovegetation or 'the tree factor'. The height and extent of vegetation in prehistory is presently not possible to recreate accurately from palaeoenvironmental evidence. Even if it were practicable to do so, how much of an obstruction to visibility the vegetation would be would vary somewhat by time of year. The viewshed therefore calculates maximum possible visibility rather than actual line of sight, which Wheatley and Gillings actually argue is a strength – GIS has an advantage over field observation in that modern tree cover is taken away (*Ibid*, 4-5; Gillings & Wheatley 2000, 181-2). Related to this is the problem of seasonal or daily cycles in which visibility is greater or lesser at certain times of the day (or almost non-existent at night) or with particular weather conditions such as fog or heavy rain. No attempt has been made to recreate tree cover or cyclical dynamics in visibility analyses of any of these case study areas – the main aim is to measure the maximum visual qualities that the location of a given site may afford. However, these limitations must be considered when applying viewshed results to any archaeological problem – the viewshed represents potential visibility rather than actual vision at a specific time.

Likewise, no satisfactory way exists of recreating the quality of vision that an individual may have had in prehistory, and the visual clarity of an object depends on its size, shape and colour and the colour and characteristics of the background that it is viewed against (Wheatley & Gillings 2000, 5). These difficulties can be somewhat addressed by using a fuzzy viewshed where the degree of visibility decreases with distance, and in this study an attempt has been made to do so by dividing viewsheds into 10 km, 5 km and 1 km radii, with visibility over the 1 km radius likely to be more directly relevant to the lives of a site's inhabitants than 10 km or 5 km. This, however, only partially deals with the problem and does not address object-background clarity at all (Wheatley & Gillings 2000, 5). Furthermore, viewsheds do tend to assume a perfectly reciprocal relationship between viewer and the object or location being viewed, which is not always true in reality - they do not capture 'hidden' sites where someone could observe but not be seen, for example on a ridge when an observer is looking downwards. In this case the observer could see a spot on the valley floor below them, but someone on the valley floor would be unable to see the ground at the observer's feet. This is especially true where the distance being viewed decreases relative to the observer height, but has a proportionally lesser effect over longer distances (Wheatley & Gillings 2000, 5-7; Gillings & Wheatley 2000, 182-3). For the purposes of this study observer height for all viewsheds has been set at 1.7 m as the conventional eye height for a human, although prehistoric observers may conceivably have been shorter on average. The problem of imperfect reciprocity in viewsheds has been addressed by using a series of points to capture the size and shape of a fortified site such that outcomes do not depend on the assessment of a single point. No attempt has been made to recreate the size of ramparts in this study – reconstructing the height of such structures given the paucity of excavated evidence and the significant effects of soil erosion and stone robbing at many of these sites would be a significant undertaking, albeit one worthy of future research. Given that each point has an observer height of 1.7 m, what is actually simulated is a human standing on the ground at each location along the extremities and in the interior of the site.

A cumulative viewshed was carried out over a 10 km radius for each site under investigation in the three case study areas. This created a layer in ArcGIS within which every tile was scored by how many of the points simulating the enclosed site could see it, effectively ranking the surrounding landscape from most visible to least visible (Figure 6.13).

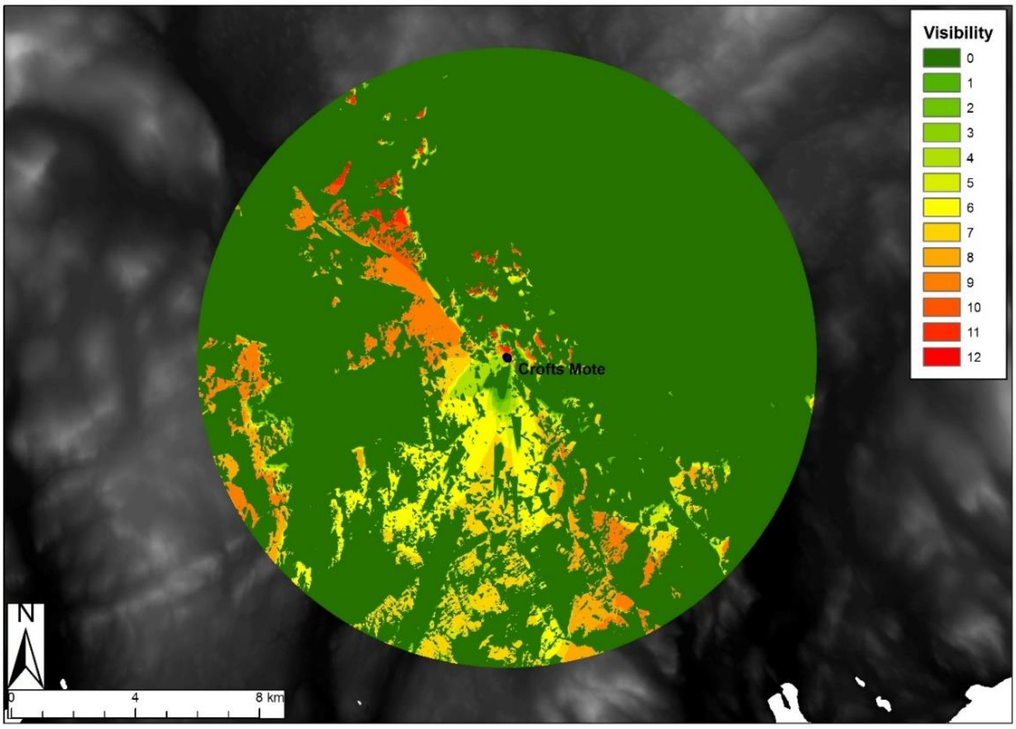

FIGURE 6.13: *Crofts Mote in Kirkcudbrightshire. 10 km cumulative viewshed taken from the points representing the extent of the site, ranked by how many points can see each tile in the landscape**.** Green areas of the map are least visible, red most visible.*

The cumulative viewshed results were reclassified to visible (1) and invisible (0), in order to simplify their incorporation with agricultural land data (Figure 6.14). The priority in these case studies is not the most accurate recreation of the visibility of an observer at a given point, but to generate data related to general visual prominence of sites across a very large dataset of sites. The author considered that grading the viewsheds by most and less visible added too much complexity to the analysis when calculating, graphing and statistically assessing results at such a macro scale within the three case studies. The data generated therefore represent the probable maximum visibility from and to sites.

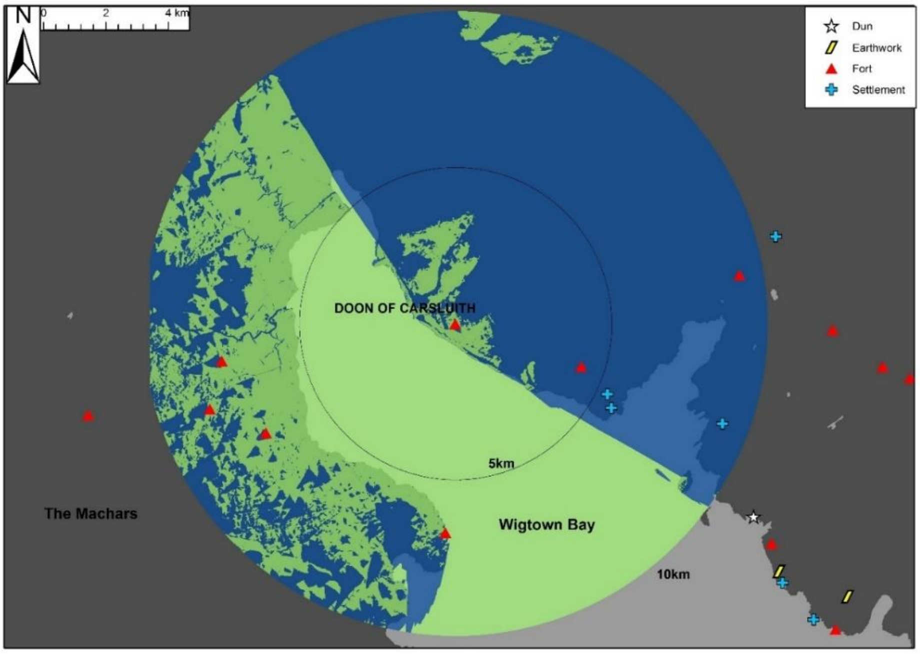

Figure 6.14: *Doon of Carsluith in Kirkcudbrightshire with 10 km viewshed reclassified to visible and not visible.*

The percentage of the 10 km area that may have been habitually visible from the site could then be calculated, both including the sea or, through removing all sea tiles by extraction, the percentage of only the land area visible could be determined. The number or percentage of other sites that may have been visible within 10 km could be counted. Subsequently the LCA layer that had previously been reclassified into agricultural (1000) and non-agricultural (0) land was added to the viewshed layer using map algebra (Figure 6.15), resulting in the values seen in Table 6.2, which compare land quality with visibility.

Value	Interpretation
0	Invisible non-agricultural land
1	Visible non-agricultural land
1000	Invisible agricultural land
1001	Visible agricultural land

Table 6.2: *The visibility rankings of agricultural land in GIS.*

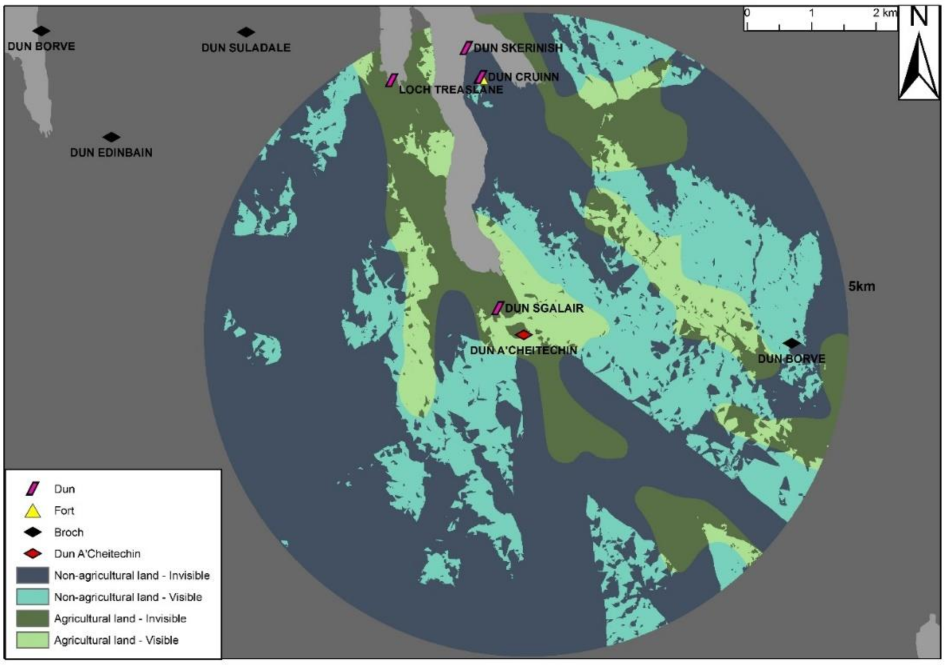

***Figure 6.15**: 5 km viewshed combined with reclassed LCA layer to show the visibility of various types of agricultural land, from Dun a'Cheitechin, a broch on Skye.*

Various calculations could be made, such as the percentage of each site's local visibility that was comprised of agricultural land, or the percentage of surrounding agricultural land itself that was could be seen or not, over various distances. The numbers generated by these analyses were assessed using the methods described in section 6.3.1.

6.4 Conclusions

In essence, this method, which generates empirically testable data about the character of sites' relationships with their surroundings, allows us to gather data on the character of the landscape that inhabitants of an enclosed site may have perceived on a daily basis. It enables us to explore the characteristics of what Brück (2005, 62) has called 'the landscape of routine practice' the sensual inhabitation of which 'plays a central role in the construction of social identity'. The placement of these sites is no accident; those who constructed them had prior knowledge of the qualities of the surrounding landscape and the affordances within it. It can be argued that habitual visibility of valuable farming land, the land that their social group depends on to live and that provides best fodder for their cattle, is vital to an agricultural community. While it would be wrong to assume that members of that community were confined to their enclosures and did not move around the landscape, there is a clear advantage to being able to perceive valued features of their surroundings from within the area that they have chosen to enclose. For Witcher (1999, 17) it is the perception of a landscape, how humans perceive and comprehend its qualities and understand the opportunities that it offers, that determines its use, not the environment itself, and ‘people’s decisions to settle and exploit one area in preference to another are related to how that landscape and its attributes have been perceived and structured’. This GIS-based method enables us to compare the decisions made by builders and inhabitants of different kinds of sites across the three case study areas, decisions that were based upon their experiences of their environments, or the aspects of their surroundings that they deemed important. Within this perspective are embedded several basic hypotheses:

- A predominantly agricultural settlement is likely to be positioned in order to have habitual perceptive contact with the land that it bases its livelihood on.
- A site that is positioned away from, or so as not to perceive, better farming land may be more likely to fulfil some other role in society.
- Sites with greater visibility of the sea are more likely to value it in some way, whether economic, social or political in nature.
- A site that is placed so as to be extremely visible within a landscape, or to have excellent visibility of its surroundings, is likely to differ in practical and social function from one that is positioned not to see or to be seen.
- A site with greater topographic prominence may be less likely to be an agricultural settlement and more likely to value something else, possibly power or social status, over ease of everyday access in terms of its landscape position.

These hypotheses are not merely based on common sense interpretations, but on the previously argued relationships between human settlement and its perceptual and geographic links with the affordances of the landscape.

On a more practical level, scatter plots have been utilised to analyse the resulting data for a reason. They allow patterns between site size, architectural type and relationship with the landscape to be seen, while at the same time letting us identify individual sites that do not fit the recognised patterns – something which bar charts, pie charts or most forms of statistical testing would not allow us to do. Statistical testing has been used to test the groupings observed in the scatter plots, to determine whether patterns are significantly different enough to say that groupings are positioned differently in the landscape. Analysis of sites’ links with their respective environments, compared to their size and scale of defences, may enable us to begin to identify groups of monuments that have similar characteristics – perhaps the 'not farmsteads', the recognition of which is the main aim of this thesis.

7. Kintyre

7.1 Introduction

The Kintyre peninsula is located in the southwestern part of the present-day administrative council area of Argyll and Bute. It is roughly 64 km in length from north to south and between 9 km and 18 km in breadth, with the wider part at the southern tip. The southern part of the peninsula has been chosen for this case study, that is, the 35 km from the Mull of Kintyre in the south to Carradale in the north (Figure 7.1). It is envisaged that this stretch of land contains sufficient variety and number of sites and environments to effectively explore the relationship between site and landscape position in Kintyre.

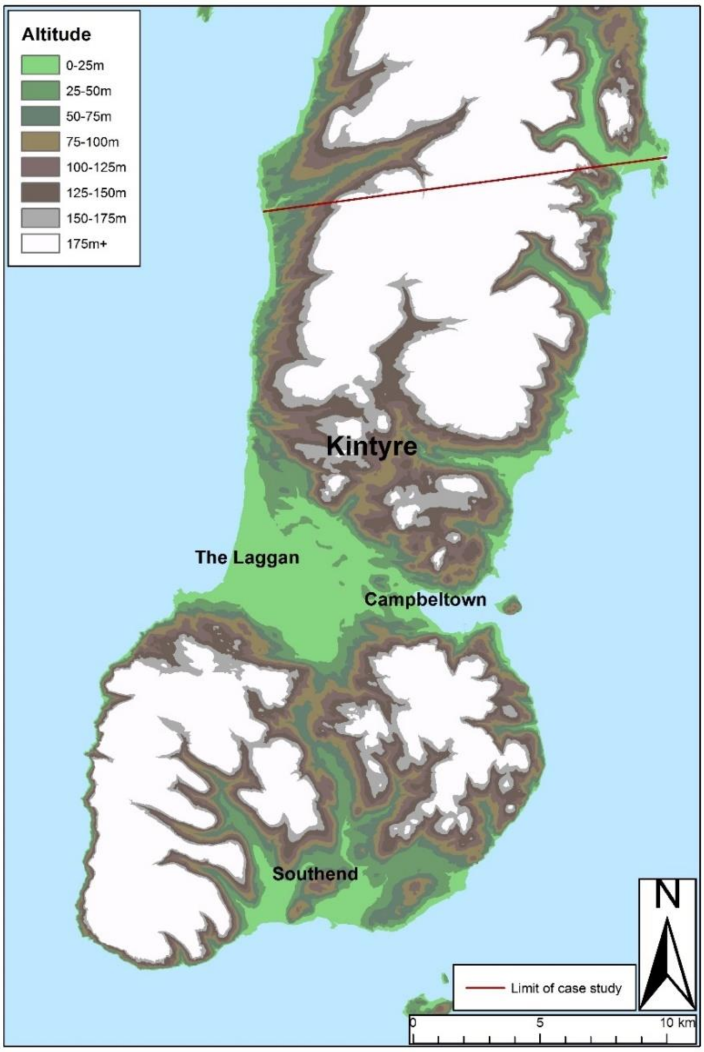

***Figure 7.1**: Extent of case study area and topography.*

7.1.1 Geology and Soils

The interior of the case study area north of modern day Campbeltown consists of high ground, the highest point being Beinn an Tuirc at 455 m. The dominant geology is metamorphic rocks of the Cambrian period, Dalriadic schist - psammite and pellite, with a band of older, Neoproterozoic, schists along the west coast. It is mostly peaty and infertile – where there is not blanket peat the soil has been subject to significant amounts of ground- and surface-water gleying. The exceptions are inland from Carradale, with a large area of alluvial soils in the valley of the Carra Water, along with raised beaches dating to the Devensian (Carter & Tipping 1992) and the lower-lying strip along the West coast, where better drained soils and drier climatic conditions combine to make the land more amenable to agricultural settlement. Further south, directly west of Campbeltown the geology changes somewhat with a mixture of sedimentary rocks of the Carboniferous period, such as mudstone and coal, and igneous rocks mostly dating to the Dinantian. This part of Kintyre is a large depression of about 64 km^2 locally known as the Laggan. It has been suggested that the western part of this depression may have been extremely boggy in later prehistory (Peltenburg 1982, 143; Nieke 1984b, 12), with the crannogs of Durry Loch and Clochkeil identified in this area (RCHAMS 1971, 94). The area has been mostly drained in modern times and much of the western portion is now occupied by Campbeltown Airport. The soils of the Laggan are very fertile relative to the rest of Kintyre and Argyll as a whole, consisting mainly of alluvium and brown forest soils, and it is used extensively for both arable and pastoral farming today. South of Campbeltown is mostly upland with a large region of Dalradian schists to the west and sandstone, siltstone and mudstone of the Devonian period to the East. Like the high ground to the north, soils have undergone large amounts of gleying and there are areas of blanket peat, the exception being at Southend where lower-lying ground and some alluvial soils contribute to more favourable conditions for agriculture (Figure 7.2 and 7.3).

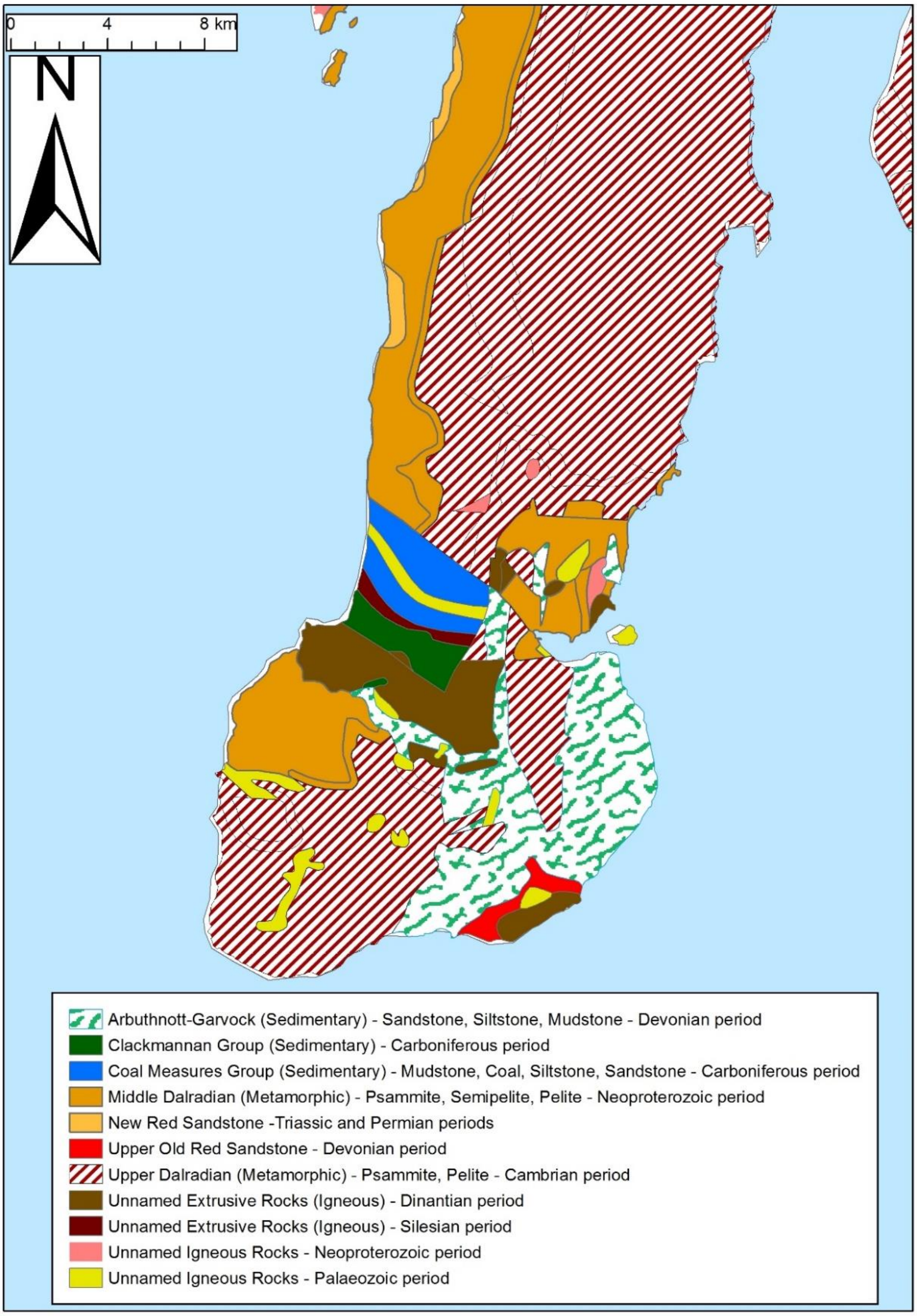

***Figure 7.2**: Geology (Data from British Geological Survey ©NERC. All rights Reserved).*

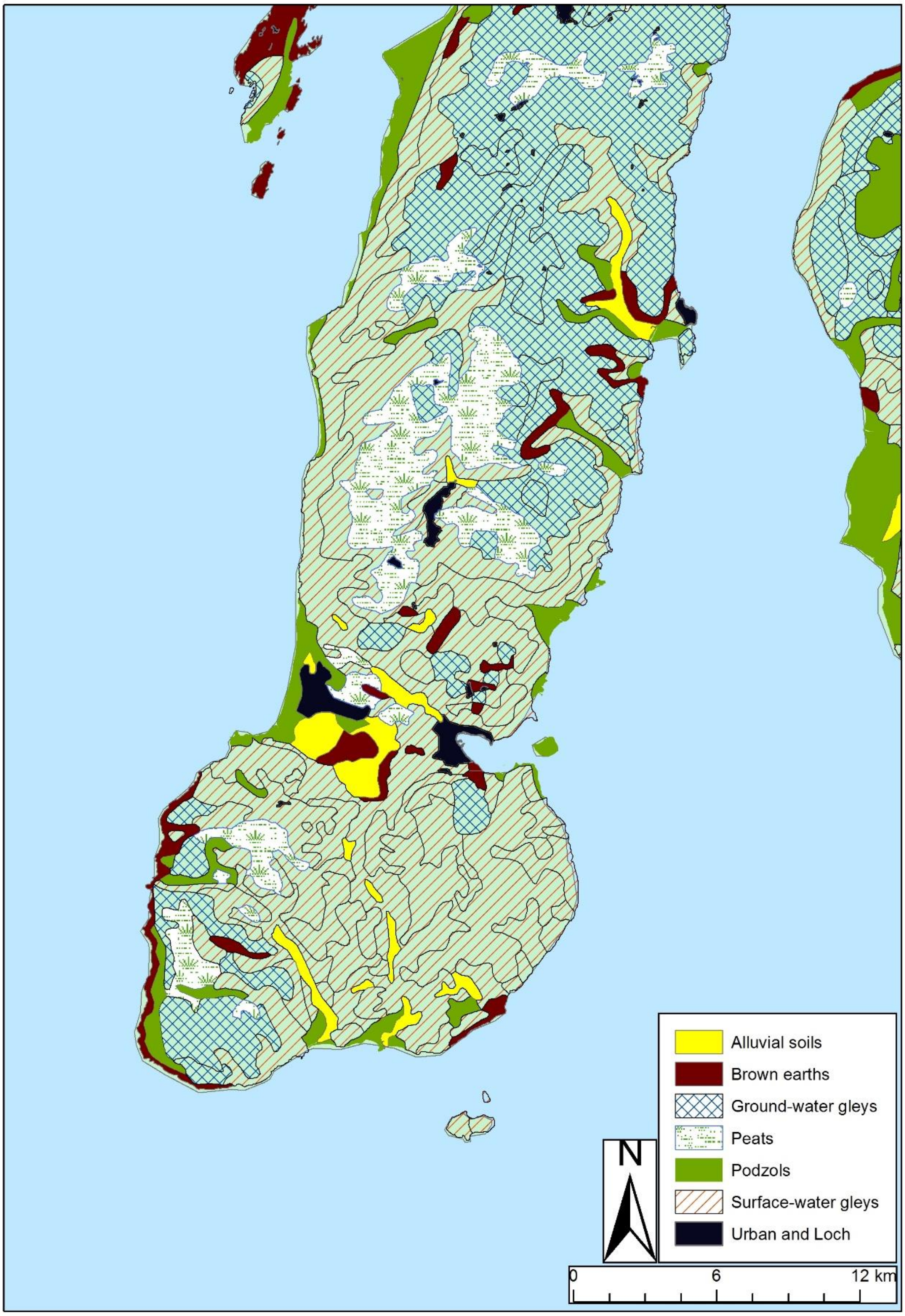

Figure 7.3: *Soil classification (Data from Soil Survey of Scotland Staff. (1981). Soil maps of Scotland at a scale of 1:250 000. Macaulay Institute for Soil Research, Aberdeen)*

7.1.2 Archaeological background

The RCAHMS Canmore ID number of each site has been used in italics for identification of enclosed sites throughout this section.

Mesolithic and Neolithic occupations of Kintyre are apparent, from flint deposits in the vicinity of Campbeltown and chambered tombs concentrated in the south and west of the peninsula. An absence of earlier prehistoric settlement evidence continues into the Bronze Age, with no definite indications of domestic occupation. Unenclosed hut platforms, generally surviving at higher altitudes on moorland, may represent domestic sites from this time period. Ritchie (1997, 48) has argued that the absence of Bronze Age settlement evidence is likely due to a lack of comprehensive survey in Kintyre, and he theorised that much of what survives may be buried beneath blanket peat. The picture is different for funerary archaeology, with significant numbers of round cairns and cist burials evident throughout the peninsula.

The occupation of the larger enclosed sites of Kintyre, and Argyll as a whole, is considered to be Iron Age (e.g. Nieke 1984a; 1990; Alcock & Alcock 1987), although there is no *a priori* reason to assume that a site like the relatively large enclosure of Cnoc Araich (*38296*) was not occupied in the Bronze Age, like excavations have indicated may be possible for larger forts elsewhere in Scotland such as Eildon Hill North or Traprain Law. Similarly, other sites in Argyll and Bute like Duntroon or Dunagoil have fairly undiagnostic Late Bronze Age/Early Iron Age assemblages (Christison & Anderson 1905; Armit & Ralston 2003; Harding 2004a). It is possible that the chronology of probable multiperiod sites in Kintyre such as Ranachan Hill (*38368*) or Largiemore (*38369*) may stretch back to or before the beginning of the first millennium BC. The remains that are most apparent on the surface at the majority of fortified sites are, however, more likely to be Iron Age, based on the admittedly scant evidence of sixteen early radiocarbon dates from Balloch Hill (*38340*), many taken from the superstructure of the rampart or general occupation layers and none reliably dating the construction of the defences (Peltenburg 1982, 14), and sites elsewhere like Eilean an Duin at Craignish (Nieke & Boyd 1987, 55-6) or Sheep Hill in West Dunbartonshire (MacKie 2015).

The largest enclosures in southern Kintyre survive as mainly drystone structures (Figure 7.4). A 0.2 ha enclosure on the summit of Knock Scalbart (*38807*), north of Campbeltown and the Laggan, is intriguing in that it is set back from the steep slopes of the hill upon which it is placed. It appears that the construction of a regular sub-rectangular shape was more important to the builders than efficient defence using natural topography, a marked contrast to many fortified sites in Mid Argyll and on Islay, and different to the enclosure on nearby Ballywilline Hill (*38808*), which uses sheer cliffs in much of its defensive circuit. The fort on Ranachan Hill, also north of the Laggan, has been interpreted as a 1st millennium AD fort within a larger 1st millennium BC enclosure, largely due to the higher quality walling and considerably better preservation of the innermost wall (Feachem 1966, 83-4; RCAHMS 1971, 74-5). There is, however, no stratigraphic relationship between the ramparts, and no way of knowing without comprehensive excavation. A large, relatively flat space measuring up to 0.3 ha between the two outer and inner ramparts, represents an area that could certainly have been conducive to settlement or craft activity. An ephemeral outermost boundary beyond the currently visible ramparts is almost invisible today, but if originally a part of the defences, the enclosed space would have been much bigger. Carradale Point (*39221*), a heavily vitrified oblong site on a promontory in the far north east of the case study area, is intriguing in that it is an enclosure that does not cut off the headland, but comprises a complete circuit. Unusual short lengths of walling at right angles to the main enclosure appear to delimit parts of the promontory, perhaps cutting off points of easy access from the sea. Another probable prehistoric enclosure (*350122*) has recently been found by Halliday less than 500 m inland, along the approach to the site, and, if contemporary, knowledge of the character of the relationship between the small vitrified headland fort and its neighbour would be of significant value. Kintyre, unlike most of Argyll, also has two sites whose defences survive as, and probably were in their original condition, earthworks – Kildalloig (*38707*) and Cnoc Araich. The former is a 0.1 ha curvilinear multivallate site south east of Campbeltown, of a type seen mainly in southern Scotland (e.g. Laggan Camp, Wigtownshire (*62668*)). Similarly, Cnoc Araich, by far the largest site in Kintyre at 2.5 ha, positioned on a relatively low hill amid rolling farmland, has bivallate or trivallate earthwork defences and a rectilinear shape. It is unique in Atlantic Scotland in its combination of size, shape and construction.

The smaller enclosed sites (Figure 7.7), mostly categorised as duns, are made up of mostly circular or oval examples, with several unusually shaped sites such as the rectilinear stack at Dun Fhinn (*38467*) or the largely triangular dun at Kildonan Bay (*38756*). Kildonan was excavated by Fairhurst who suggested an Early Medieval occupation, which was later supported by two radiocarbon dates obtained by sounding in 1979 (Fairhurst 1939;

Peltenburg & Hood 1979). Dun Fhinn was dated to the early 1st millennium AD by Bigwood due to the presence of Samian pottery and two pennanular brooches, with a possible later 1st millennium AD occupation (Bigwood 1966, 98-9). These sites are, however, morphologically dissimilar to most duns in Kintyre, and, as mentioned in Chapter 3.3, small solid walled curvilinear sites have reliably been dated elsewhere to the Iron Age, for example Loch Glashan dun (Henderson & Gilmour 2011) with four modern well-stratified radiocarbon dates, or Rahoy with its apparent later 1st millennium BC assemblage (Childe & Thorneycroft 1938). To complicate matters construction of the small, sub-circular dun at Kildalloig (*38708*) was dated by Bigwood to the third century AD, although no radiocarbon dates were obtained and the objects found were from potentially secondary contexts, leading Gilmour and Henderson to convincingly argue that the site may have been constructed in the 1st millennium BC (Bigwood 1964; Gilmour & Henderson 2011, 96). It is plausible, therefore, that many of the sites classed as forts and the curvilinear duns may have been in use at or around the same time – the mid to late Iron Age (albeit this is still a very long time) – and it is the dating of forts that seems less reliable, with the possibility that some may be early first millennium BC or even late Bronze Age.

Most enclosed sites in Kintyre are located on the slopes or summits of the hills surrounding the Laggan or along the West coast. However few prehistoric remains are visible in the valley of the Laggan itself, which is likely to have been among the most fertile agricultural land in Argyll and a major area of farming activity. This absence is mostly due to intensive cultivation of the region in medieval, post-medieval and modern times. Aerial photographs have begun to give us some idea of the scale and nature of settlement activity west of Campbeltown with numerous examples of cropmarked enclosures of probable prehistoric date identified by the Royal Commission, such as the curvilinear enclosure at Aros (*305152*), the settlement site at West Darlochan (*305153*) or unenclosed roundhouses such as the example at Dhurrie (*305151*). Additional cropmarked enclosures have recently been identified in the southern and eastern parts of the valley. They are sub-circular, with an enclosed diameter of approximately 45 m, equating to a 1500 m^2 area, and a 2 m wide ditch (Figure 7.6; David Cowley pers. comm.). It is certainly conceivable that they reflect a widespread pattern of enclosed settlement on the low ground of the Laggan, that is largely invisible today. The crannogs in the western part of the valley may also date to the Iron Age, or conceivably the early Medieval period like Loch Glashan crannog in Mid Argyll (Scott 1960; Earwood 1991; Crone 2000). The identification of these sites reminds us that in considering only the surviving fortified duns and forts we are only seeing a part of the settlement picture, both in terms of variety of site and the distribution pattern of later prehistoric domestic settlement (Figure 7.4).

7.1.3 Maps

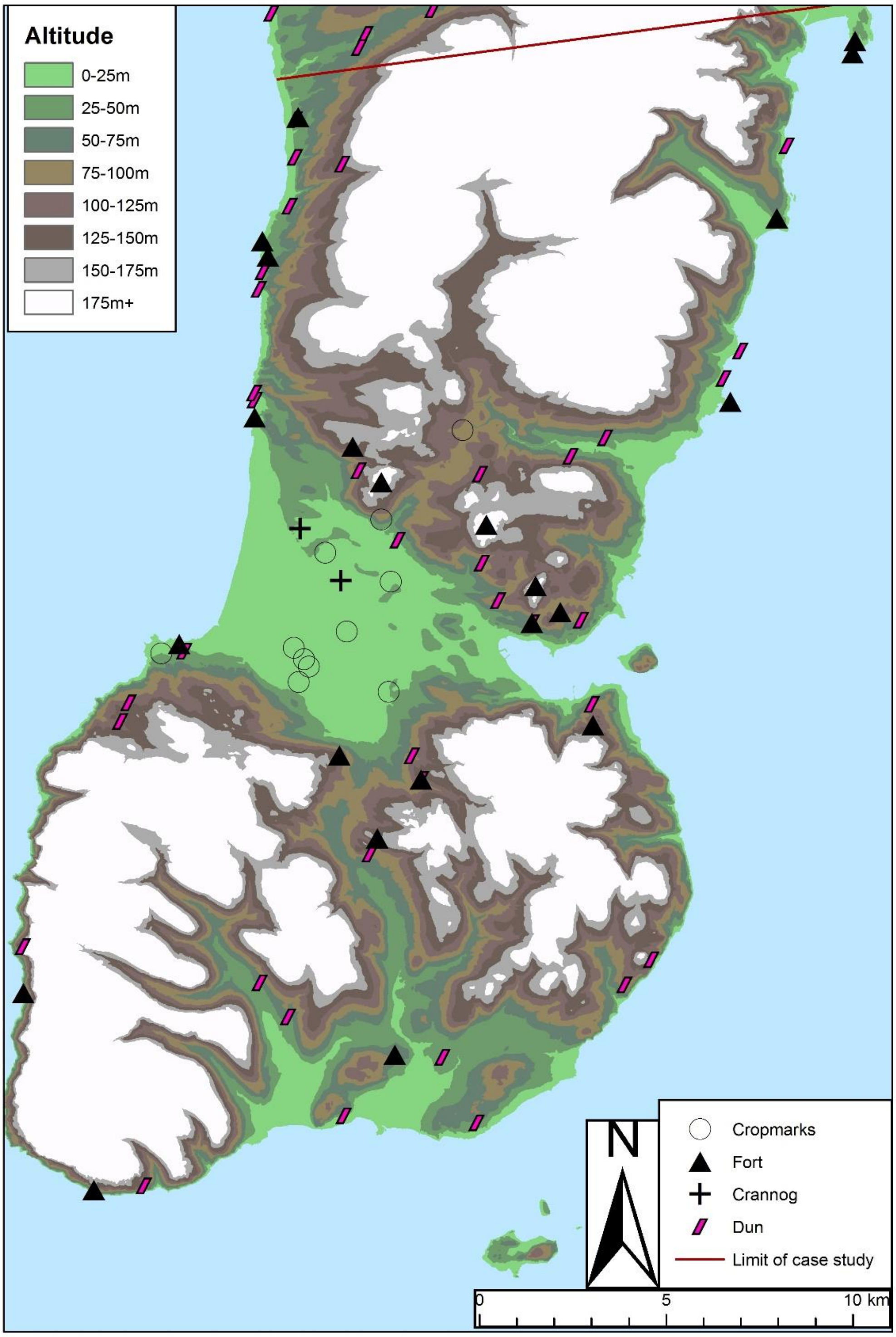

Figure 7.4: *All likely later prehistoric enclosed sites, including cropmarks that may represent later prehistoric settlement.*

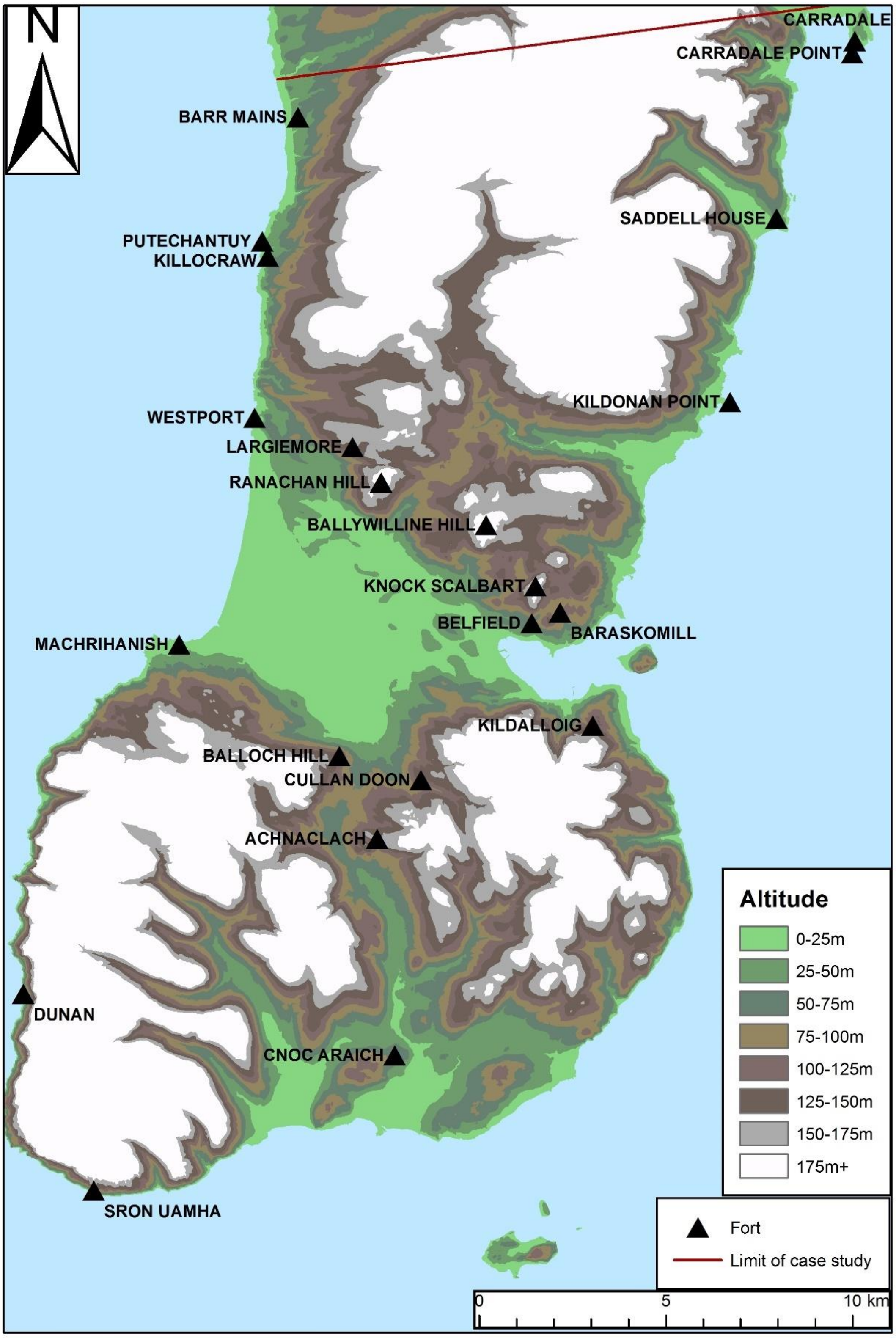

Figure 7.5: *Sites classed by RCAHMS as forts in southern Kintyre.*

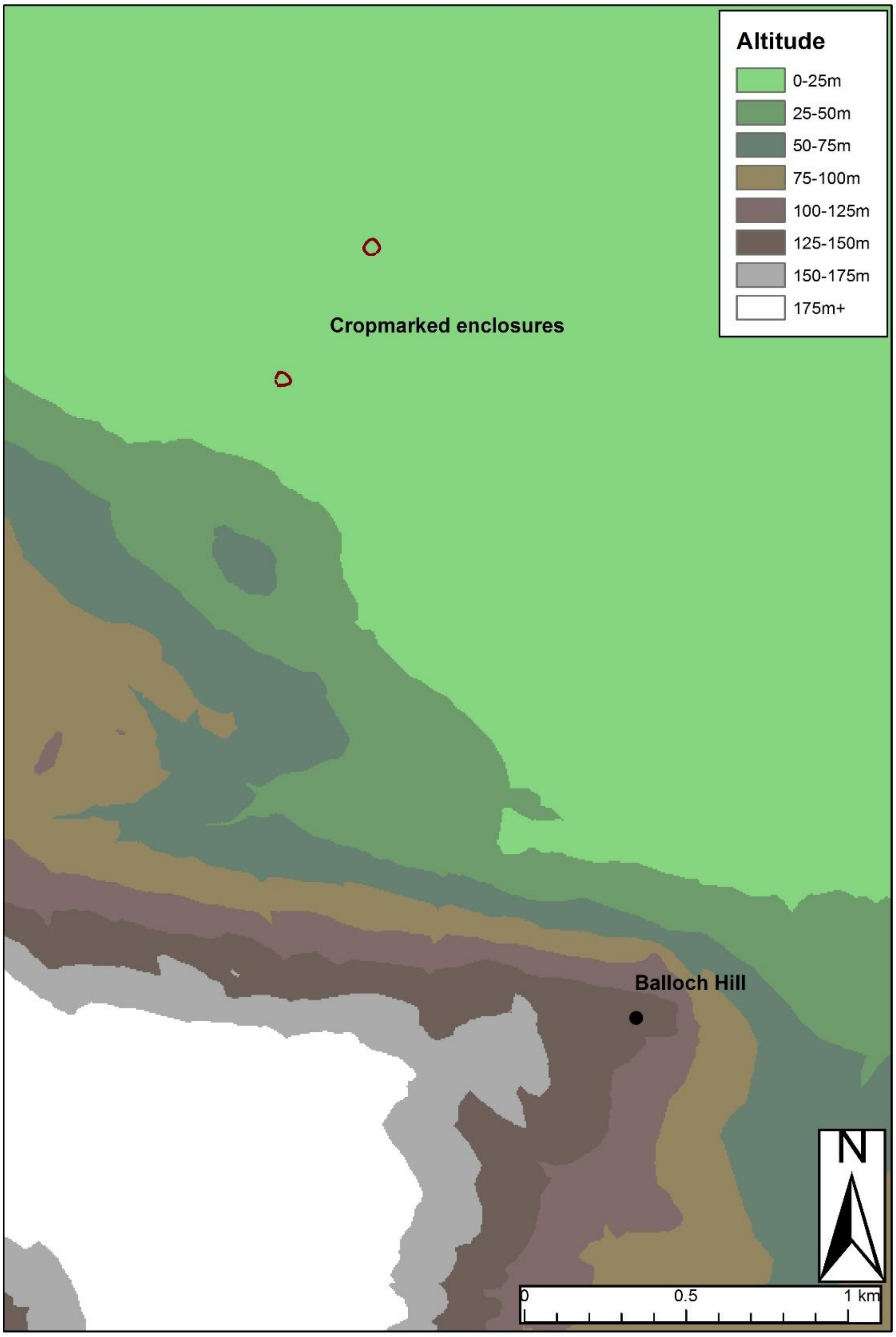

Figure 7.6: *Cropmarked enclosures that may be prehistoric enclosed settlement sites on the low-lying ground of the Laggan (cropmark data ©Historic Environment Scotland courtesy of Dave Cowley).*

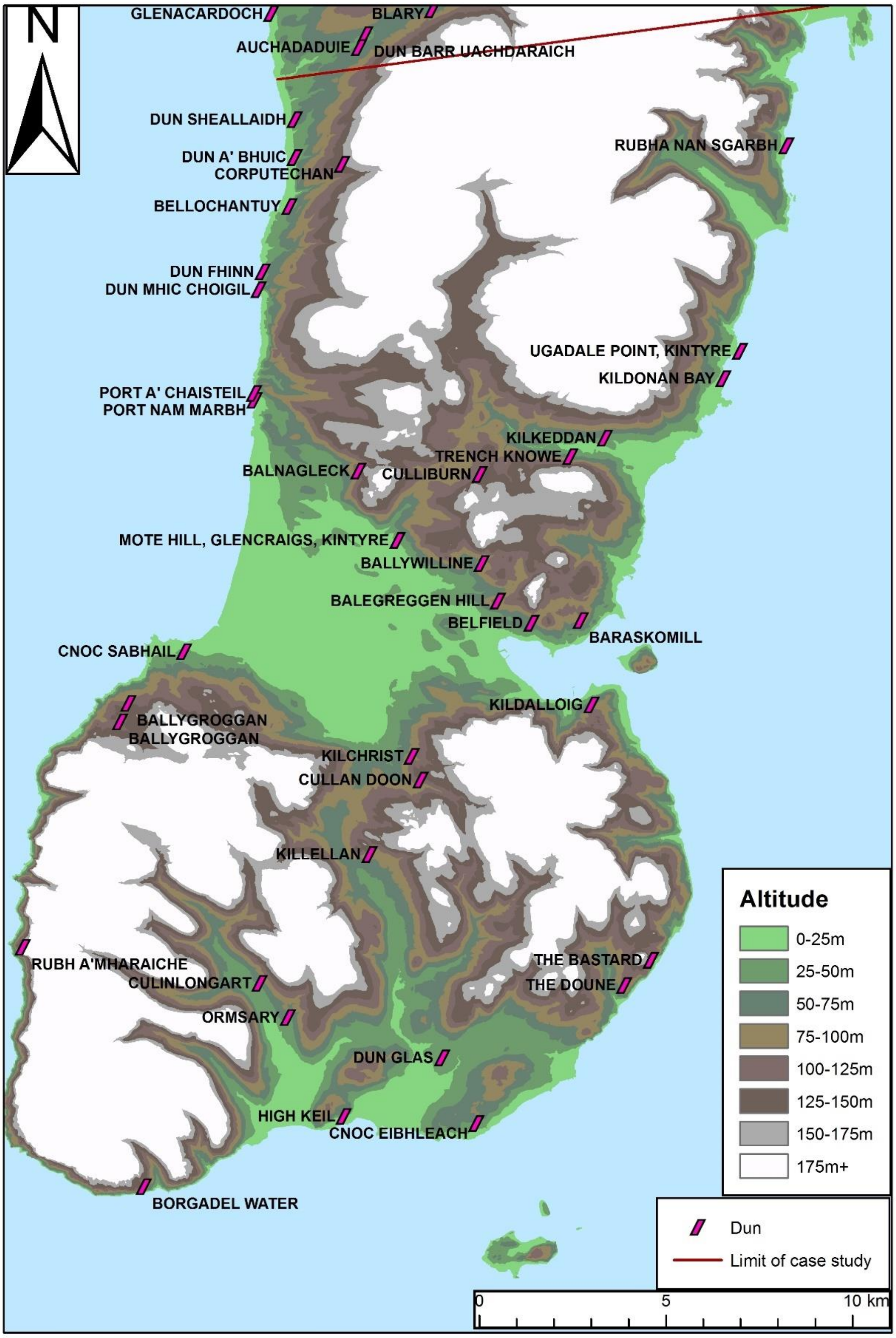

Figure 7.7: *Sites classed by RCAHMS as duns in southern Kintyre.*

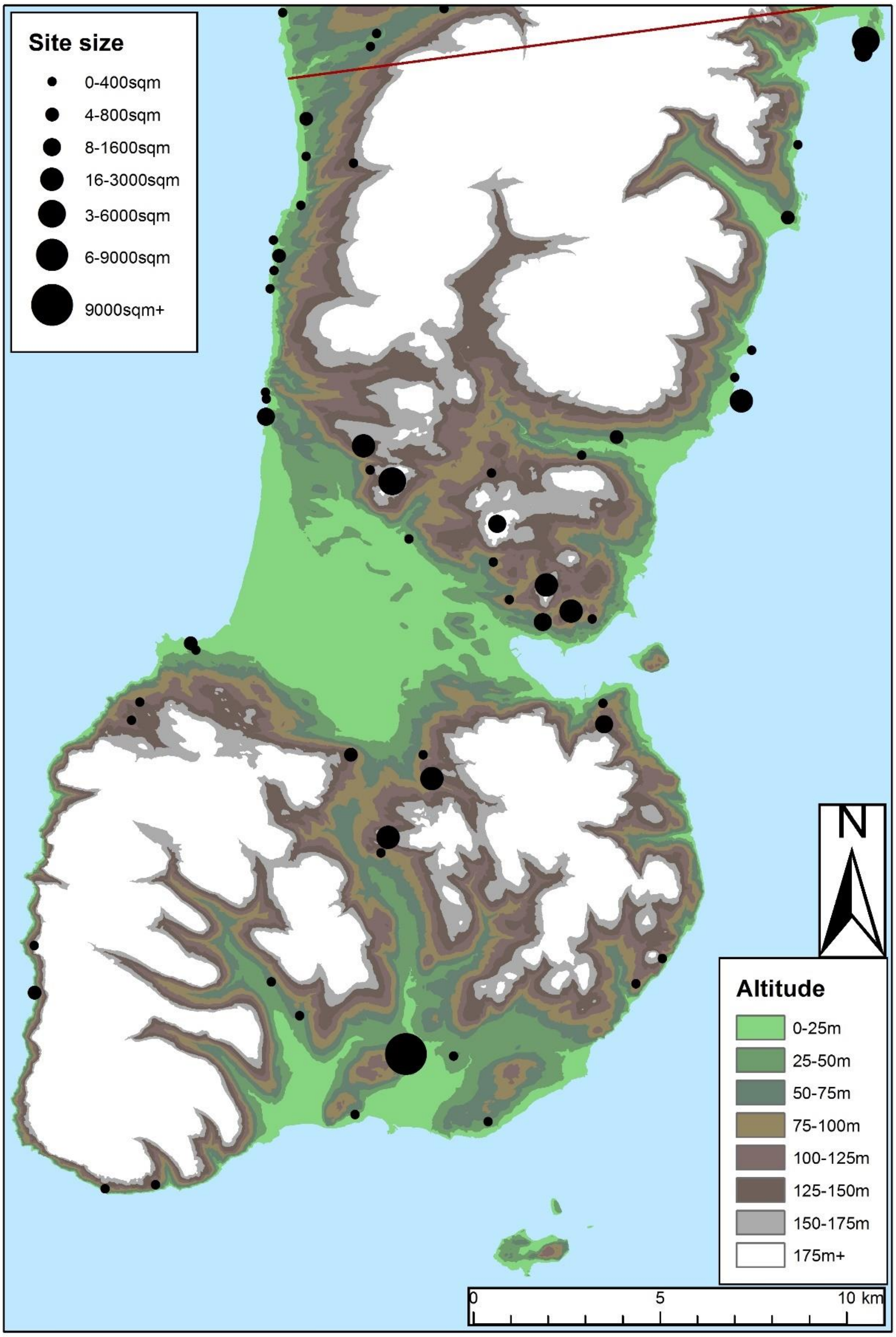

***Figure 7.8**: Enclosed sites in Kintyre by size.*

7.2 GIS-based analyses

Five size ranges have been determined on analysis of the data from Kintyre and have retrospectively been assigned a separate label to aid in explanation. These are:

- *Size A: 0-250 m^2*
- *Size B: 250-550 m^2*
- *Size C: 550-1300 m^2*
- *Size D: 1300-4000 m^2*
- *Size E: 4000 m^2+. There is only one site of this size (Cnoc Araich) in the case study area.*

It is important to emphasise that these size classes were created after data analysis was carried out. They do not represent arbitrary categories such as those in Figure 7.8, but divisions based on observed patterns in size and landscape position.

When the term 'dun' or 'fort' is used in this case study it refers to the current RCAHMS Canmore classification of sites.

7.2.1 Distance from the coast and site altitude

In Argyll enclosed sites dating to later prehistory tend to be coastally located. Kintyre, or the Laggan area in the south of the peninsula, is an exception, with an unusual distribution of inland forts and duns. Even in Kintyre, however, 63% of surviving enclosed sites are within a kilometre of the coast, compared to just 20% of total land area falling within this region (Figure 7.9). Arguably, once outside this coastal area there is little particular preference in terms of how far from the sea that sites are located, with the 3-4 km and 2-3 km bands being marginally most popular. This may suggest that sites were either directly concerned with access to the sea, i.e. using coastal resources, or, conversely, independent from everyday contact with the coast and its resources. There is a correlation between smaller sites classed as forts (those below about 1300 m^2, size C) and coastal proximity, with nine out of eleven forts of this size positioned within 500 m of the coast – only one out of the ten largest forts (sizes D and E) in the case study area is located in this region (Figure 7.10). Among the duns, sites with outworks show a preference for inland locations, while five out of seven of the (admittedly heterogeneous) group of duns that are not circular or oval are directly on the coast, within 100 m of the sea. Equally, all four duns with elements of complex Atlantic architecture – Kildalloig, Kildonan Bay, Rubh a Mharaiche and Borgadel

Water are close to the sea, and almost all sites that are between 130 and 300 m^2 in area are in closer proximity to the coast (Figure 7.11) than sites smaller than and larger than that size range. Eight out of ten non-curvilinear sites of size A and B are within 100 m of the sea, while only one curvilinear (circular or oval) example out of 27 throughout the case study area is within this distance.

Using a two sample Kolmogorov-Smirnov (K-S) test to compare the distance of duns and forts from the sea we can see that there is only a 5.6% chance that the site categories, when taken as two homogeneous entities, are abnormal with respect to each other (Figure 7.12). When all ten sites of size D and E are similarly statistically compared to all sites of sizes A, B and C there is a 99.6% chance that the two datasets differ fundamentally (Figure 7.13). It is therefore apparent that whether a site is classed as a dun or a fort has little impact on whether it is close to the coast, but larger enclosed sites, i.e. size D and E, are undoubtedly positioned further away from that feature than those below that size. Inland locations therefore are preferred for sites with greater internal area, although the favourable distribution of prominent hilltops of a preferred height above sea level for such sites in inland locations may have more to do with their position being further from the sea rather than any specific preference for constructing larger sites further from the coast. The shape of smaller sites does seem to be an important factor, with a K-S test suggesting that sites of size A and B that are not regularly circular or oval are more likely to be statistically closer to the sea at a (near) 100% confidence interval (Figure 7.14).

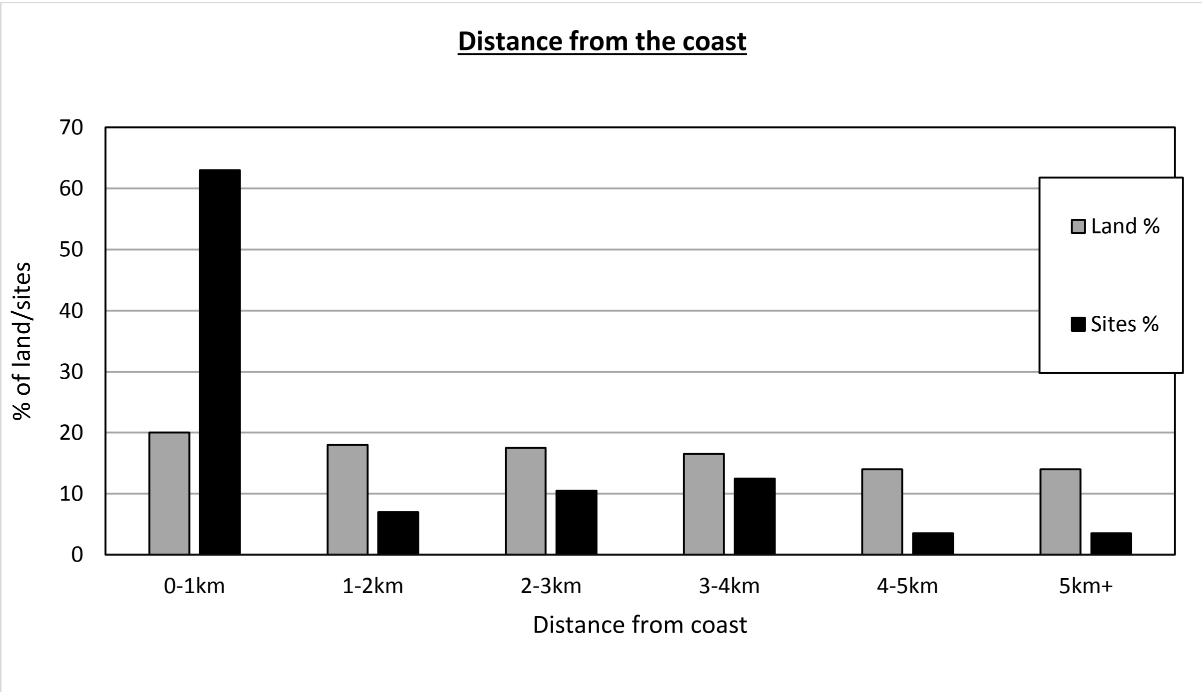

Figure 7.9*: Distance of sites from the coast. This is compared to the percentage of land*

falling into each distance category. Showing a higher percentage of sites than land close to the sea.

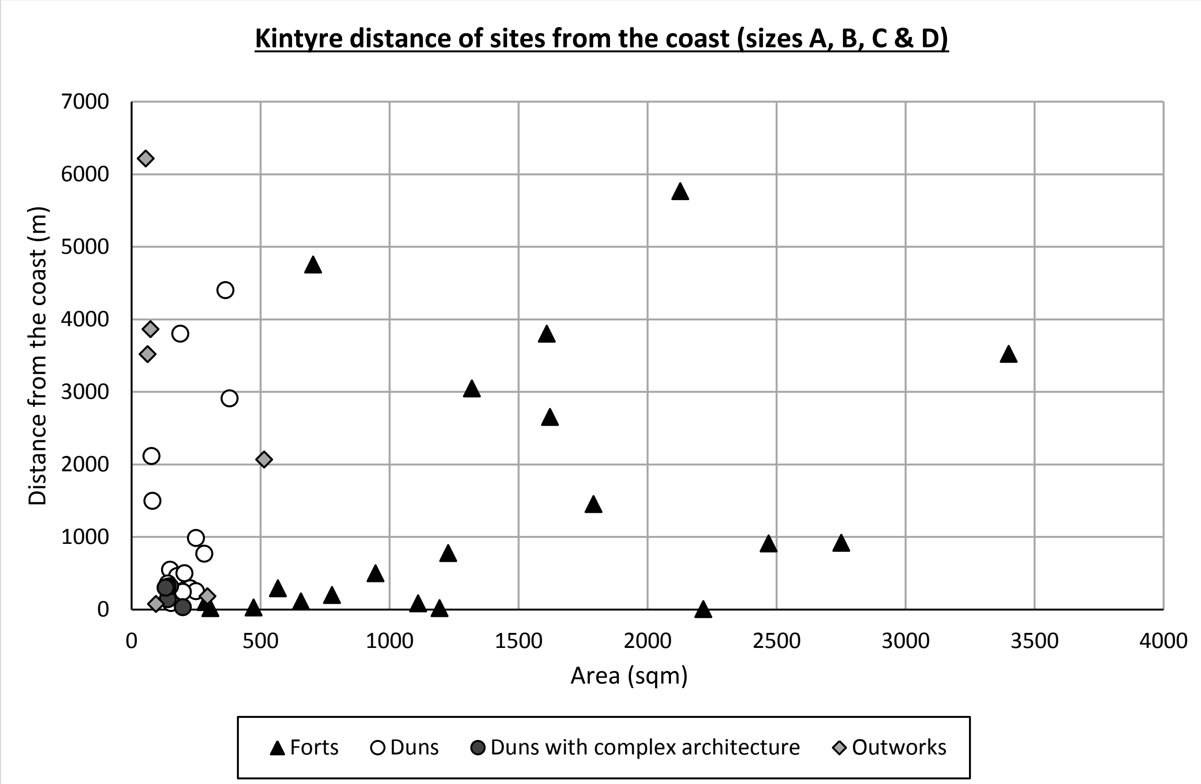

Figure 7.10*: Site area compared to distance from the coast. Larger sites in this size range are less likely to be located on the coast.*

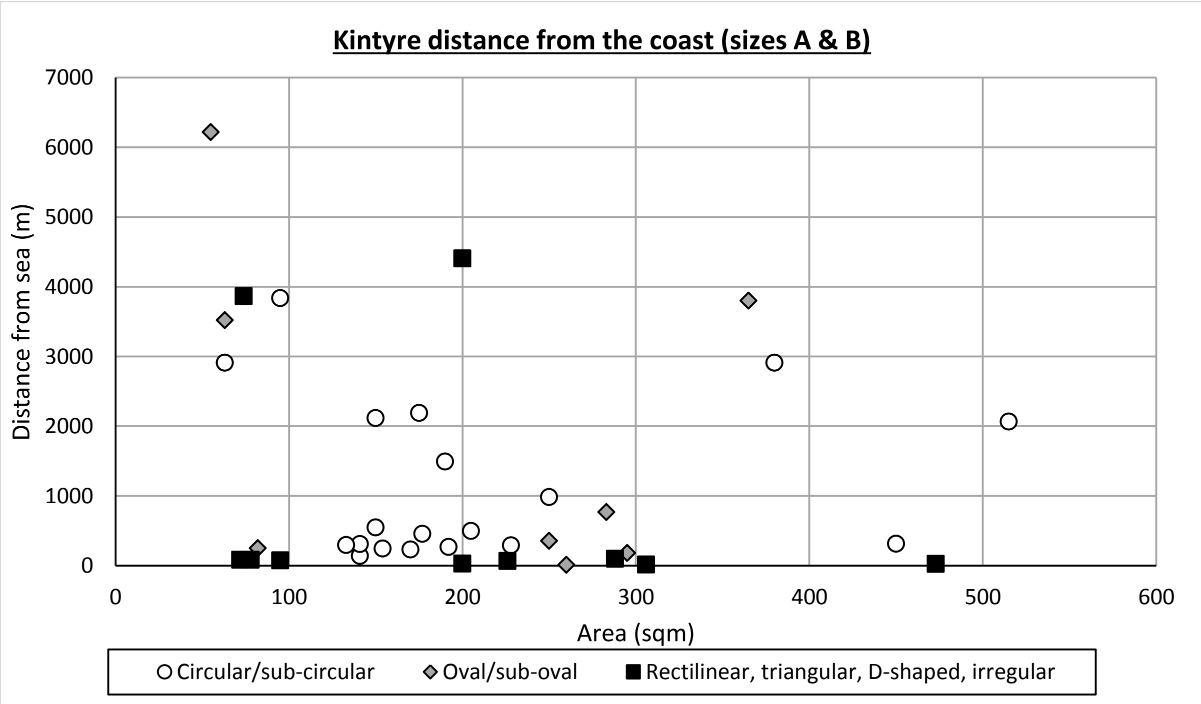

Figure 7.11*: Site area compared to distance from the coast. Sites between 130 m^2 and 300 m^2 are coastally located.*

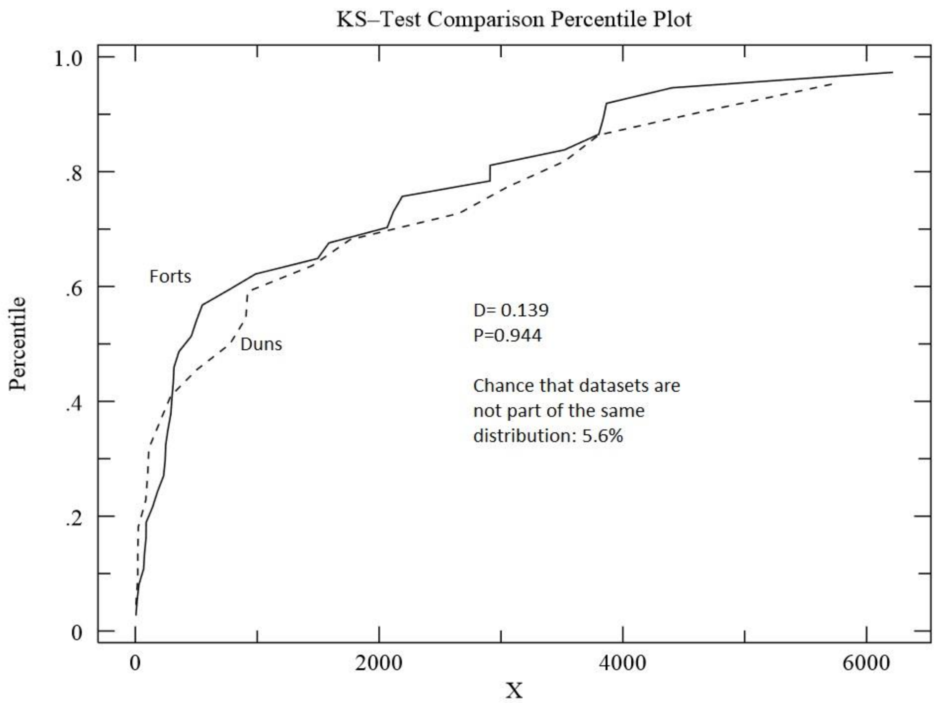

Figure 7.12*: K-S test comparing distance of duns and forts from the coast. The site categories are very likely as datasets to be positioned a similar distance from the sea.*

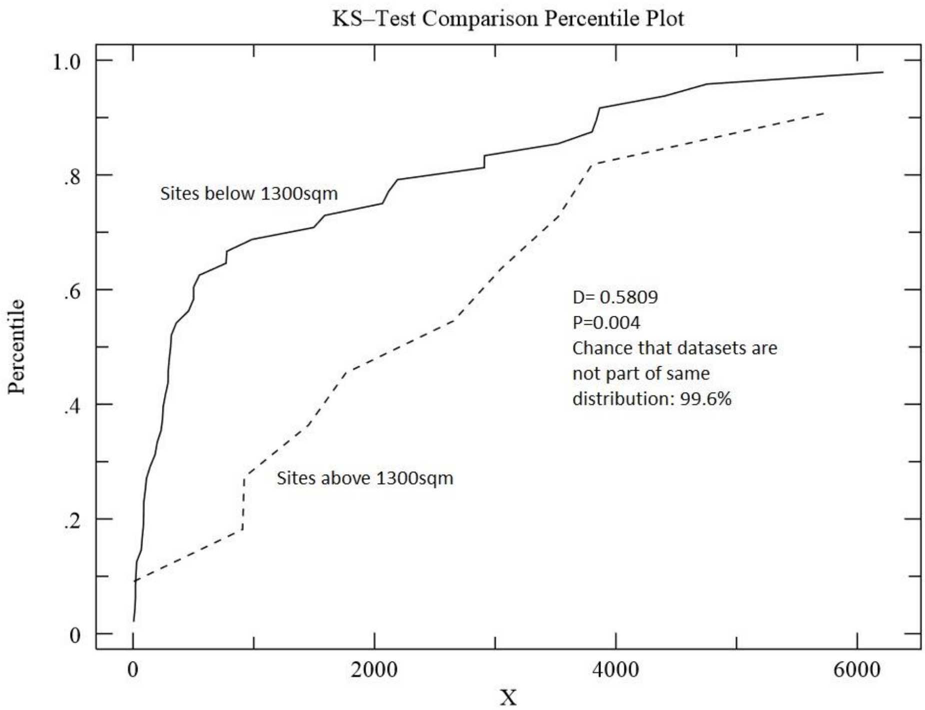

Figure 7.13*: K-S test comparing distance from the coast of sites of size A, B & C with size D & E. sites in size D & E are much more likely to be further from the sea.*

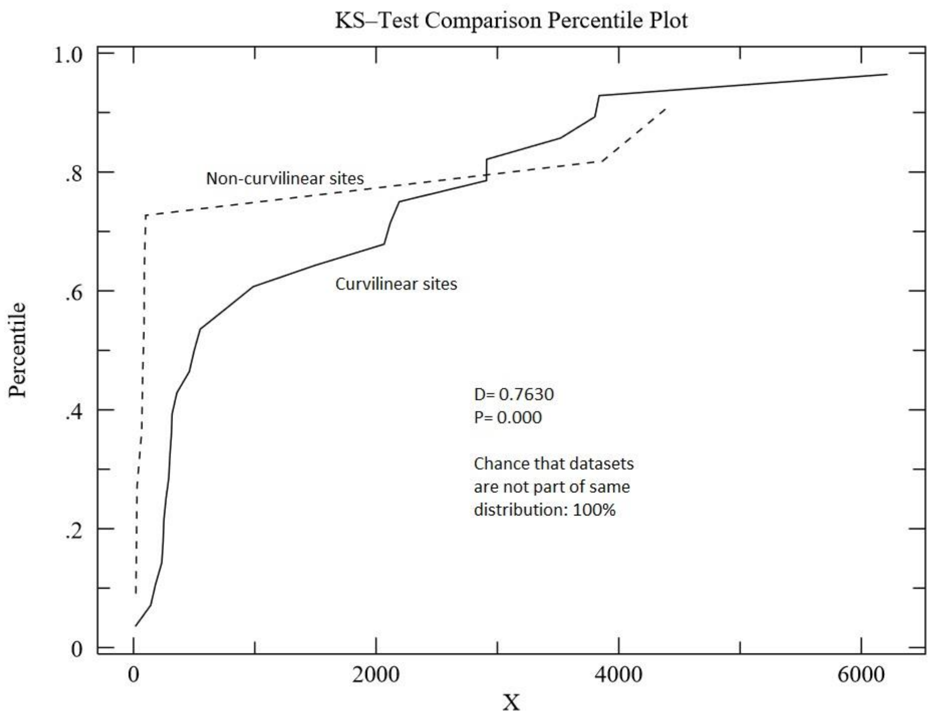

Figure 7.14: *K-S test comparing distance of curvilinear sites with non-curvilinear sites of size A & B from the coast. This shows that non-curvilinear sites are likely to be closer to the sea.*

The interior of Kintyre is mostly upland, and the apparent preference for coastal locations may be a by-product of an inclination for lowland settlement. Figure 7.15 shows land in Kintyre divided into categories of roughly equal area by height above sea level, and compares the percentage of land with the percentage of total sites falling into each category. There is a general predilection for locations below 152 m - the percentage of sites far exceeds the percentage of land below that height, while no sites are present in the two highest altitude categories. Indeed the highest sites in southern Kintyre are Ballywilline Hill, Knock Scalbart and Ranachan Hill, all at about 215 m above sea level (See Figure 7.5). Cnoc Araich, by far the largest site, is not especially high at 85 m, but looking at the remainder of enclosed sites shows some interesting patterns. Sites classified as forts are either very high, or very low, with a somewhat bipolar distribution (Figure 7.16). In particular, all the highest enclosed sites in Kintyre are among the ten largest forts in internal area. This may be related to a preference for inland locations, as discussed above, although larger, more coastally located examples such as Baraskomill or Belfield are still quite high above sea level, at 130 m and 95 m respectively.

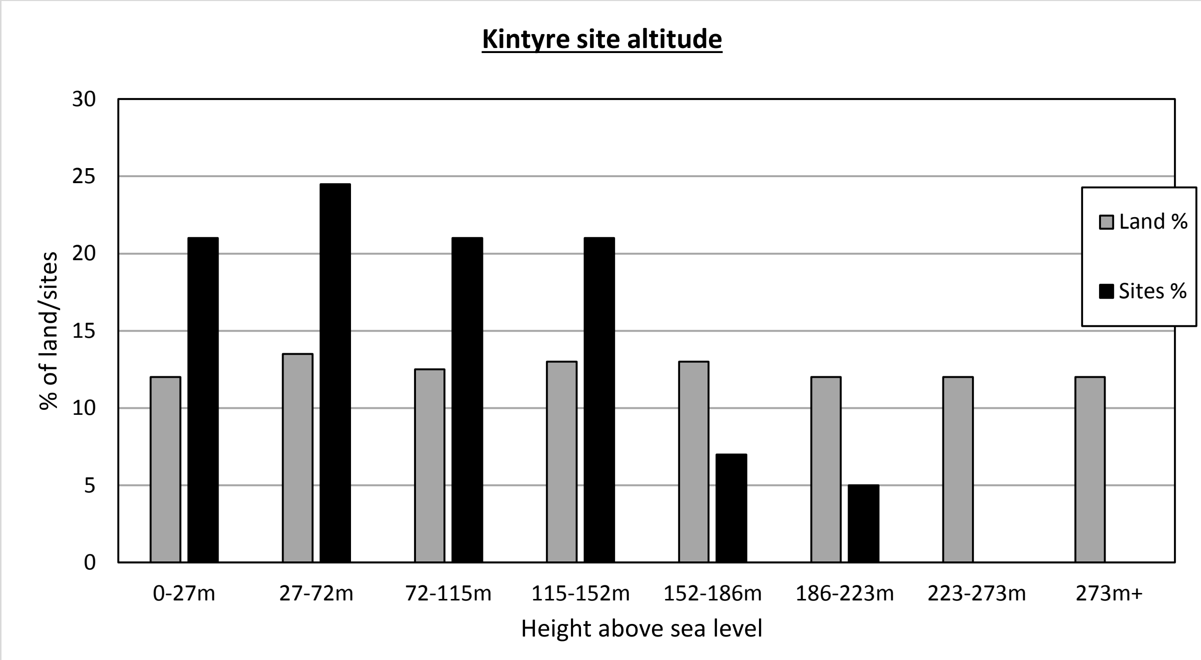

***Figure 7.15**: Height of sites above sea level (m). This is compared to the amount of land falling into each height category. Showing a higher percentage of sites than land at lower altitudes.*

The duns as a group are more homogeneous, but are still distributed quite widely between about 7 m and 150 m. Non-curvilinear sites of size A & B constitute six out of the seven lowest sites (Figure 7.17) and it would seem apparent that low-lying, coastal locations were preferred for this loose category of enclosures. Furthermore, only one site classed as a dun larger than 300 m^2 is located below 50 m above sea level. The slightly larger, more likely to be unroofable, duns considered by Harding (1984, 218-9) to be 'dun-enclosures', are more likely to be in upland positions, while smaller, roofable, more regularly circular 'dun houses' are distributed regularly between 30 m and 120 m above sea level – in both upland and lowland locations. If we compare the patterns shown in Figure 7.11 & 7.17 it seems apparent that there are many curvilinear duns between about 130 m^2 and 300 m^2 that are positioned at relatively high altitudes close to the coast – perhaps prominence in a seaward direction was an important factor in the positioning of these sites (the high seaward visibilty of this group of sites was noted by Shelly Werner in an unpublished 2007 PhD thesis, also see Section 7.2.7).

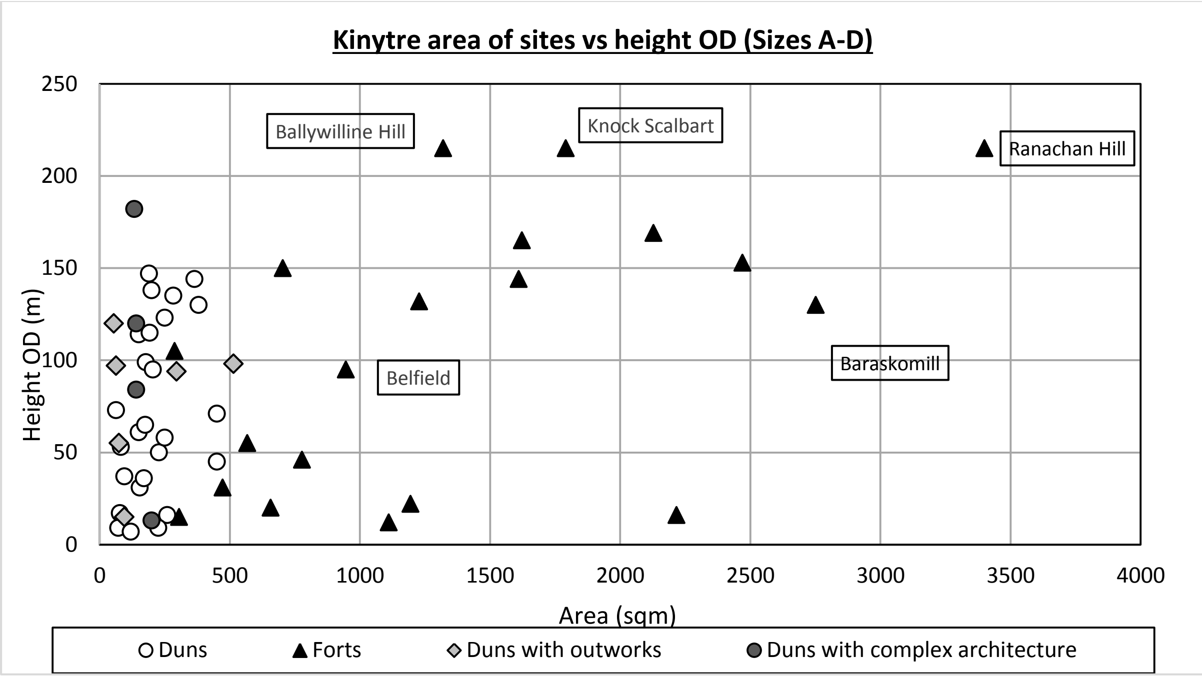

Figure 7.16: *Site area compared to height above sea level (size A - D). This suggests that sites classed as forts, of size C & D, have a bipolar distribution, while duns/size A and B do not.*

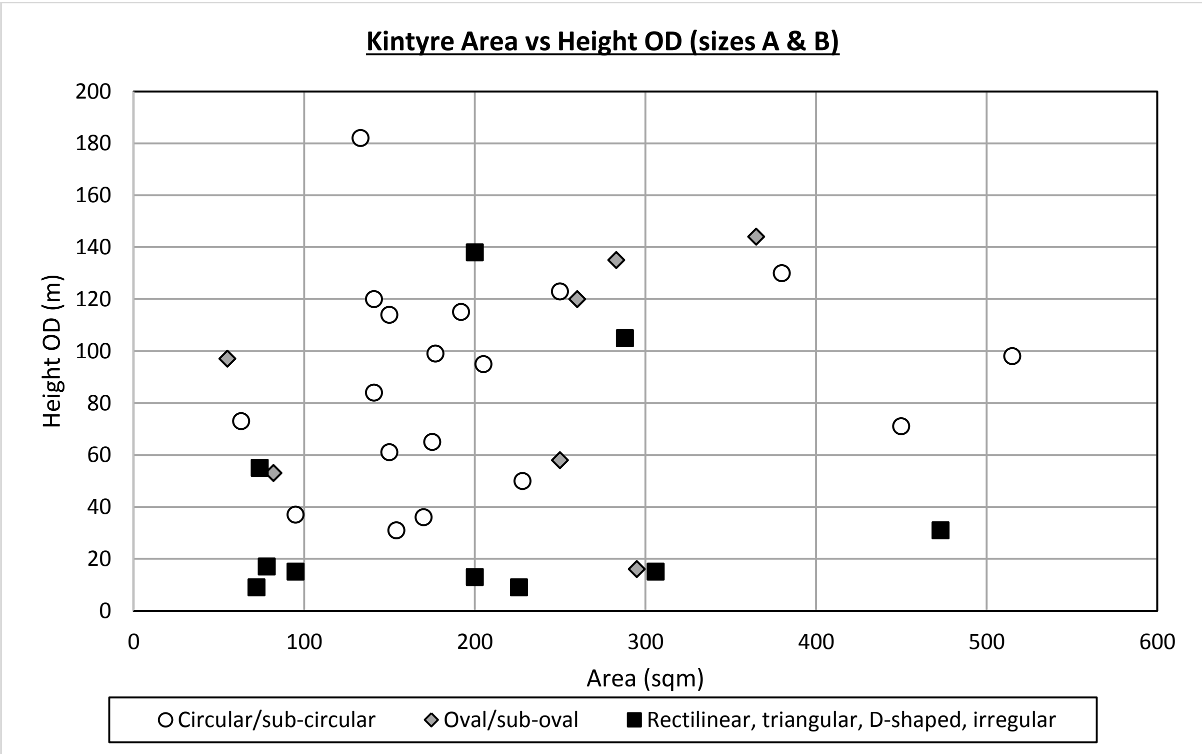

Figure 7.17: *Site area compared to height above sea level (size A & B). Non-curvilinear sites are likely to be lower. Also, examples above 300 m*^{2} *are likely to be above 50 m OD.*

If the results are tested statistically the difference in height above sea level between forts, as a group of sites, and duns is not statistically significant (Figure 7.18). However, if the ten largest sites are compared to those in size A, B and C, the datasets do belong to different distributions (Figure 7.19), with the larger sites mostly higher. Therefore it can be concluded that sites above 1300 m^2 are generally located in elevated positions compared to those smaller than that size, and that the 1300 m^2 size division may be more significant than the conventional Argyll Inventory division between forts and duns when it comes to patterns in site altitude. The morphology of smaller sites is again important, with oval and circular sites of size A & B shown to be statistically higher than non-curvilinear and irregular examples at a 99.7% confidence level (Figure 7.20).

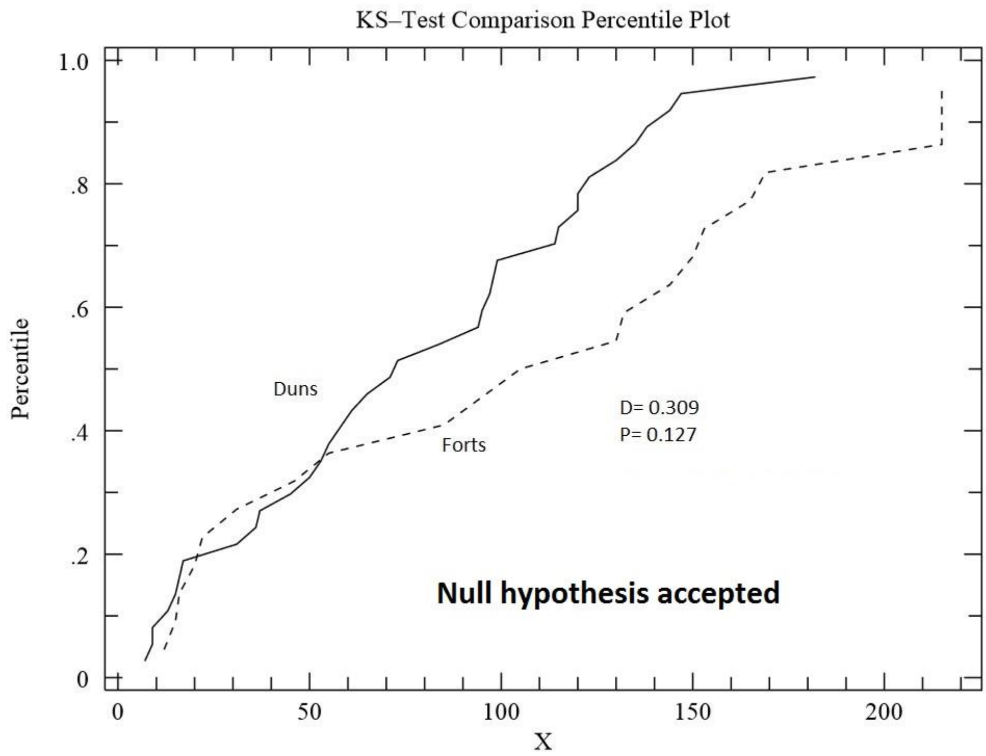

***Figure 7.18**: K-S test comparing altitude of forts and duns.*

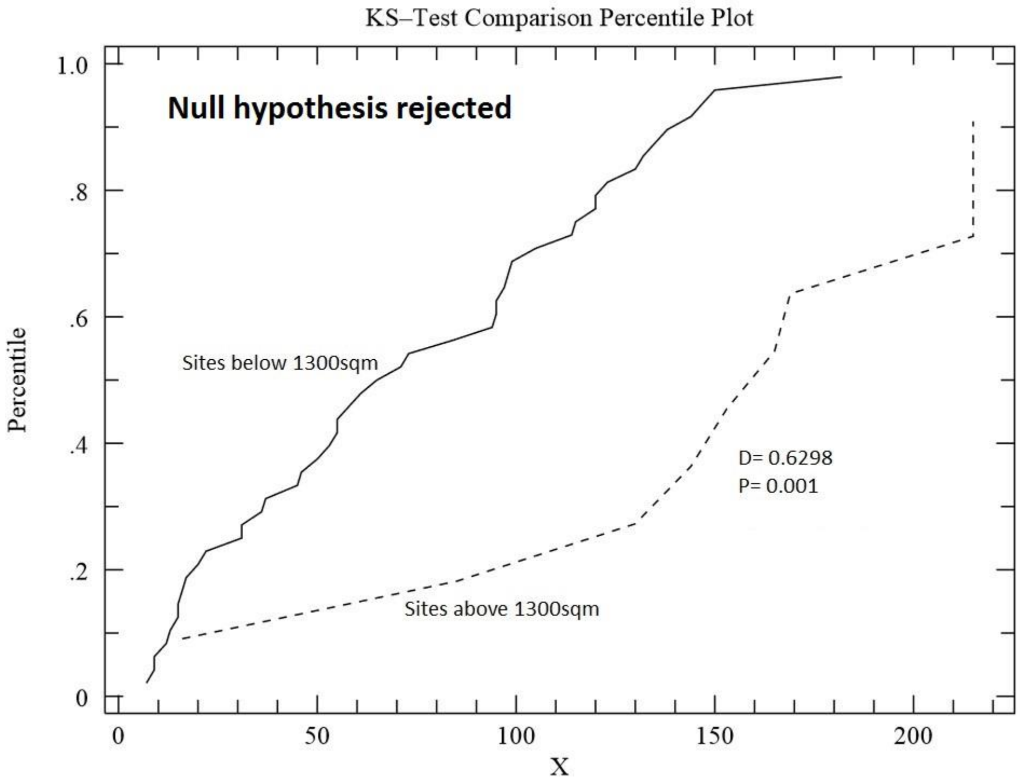

Figure 7.19: *K-S test comparing altitude of size A, B & C with size D & E.*

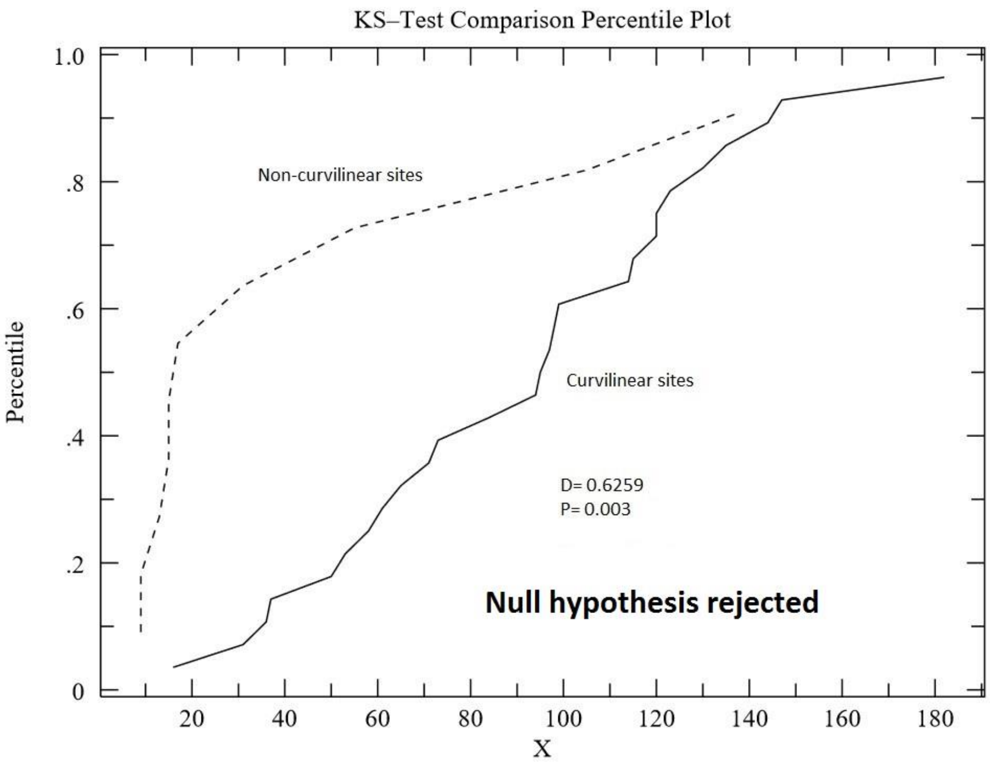

Figure 7.20: *K-S test comparing altitude of curvilinear and non-curvilinear sites of sizes A & B.*

7.2.2 Topographic Prominence

Despite the upland interior of Kintyre being largely uninhabited with later prehistoric enclosed sites a series of forts still occupies some of the most prominent positions in the southern part of the peninsula. Ballywilline Hill and Ranachan Hill are particularly prominent over their surrounding 10 km radii, with more than 80% of land lying below them (Figure 7.24). It is notable that Cnoc Araich does not fit in, in terms of regional prominence, with most of the sites closer to it in size, with only 28% of land lying below it within 10 km (Figure 7.21) – it is not at all regionally prominent, with higher hills surrounding the valley around Southend to the north and west (Figure 7.23). It does, however become more prominent within the 5 km and 1 km distances, indeed in the latter case it is among the more statistically prominent sites in southern Kintyre (Figure 7.22).

Even so, the highest ground locally has not been chosen for locating Cnoc Araich, with a hill overlooking it 250 m to the west. Topographically, it could be argued that Cnoc Araich is prominent, but not separate from the low-lying ground around it – it is a part of the valley it is in rather than apart from it. Access to it would have been easy for those inhabitants of the surrounding area that were allowed inside. This is in contrast to sites like Knock Scalbart or Ranachan Hill, which would have been inconvenient for habitual access from low-lying ground.

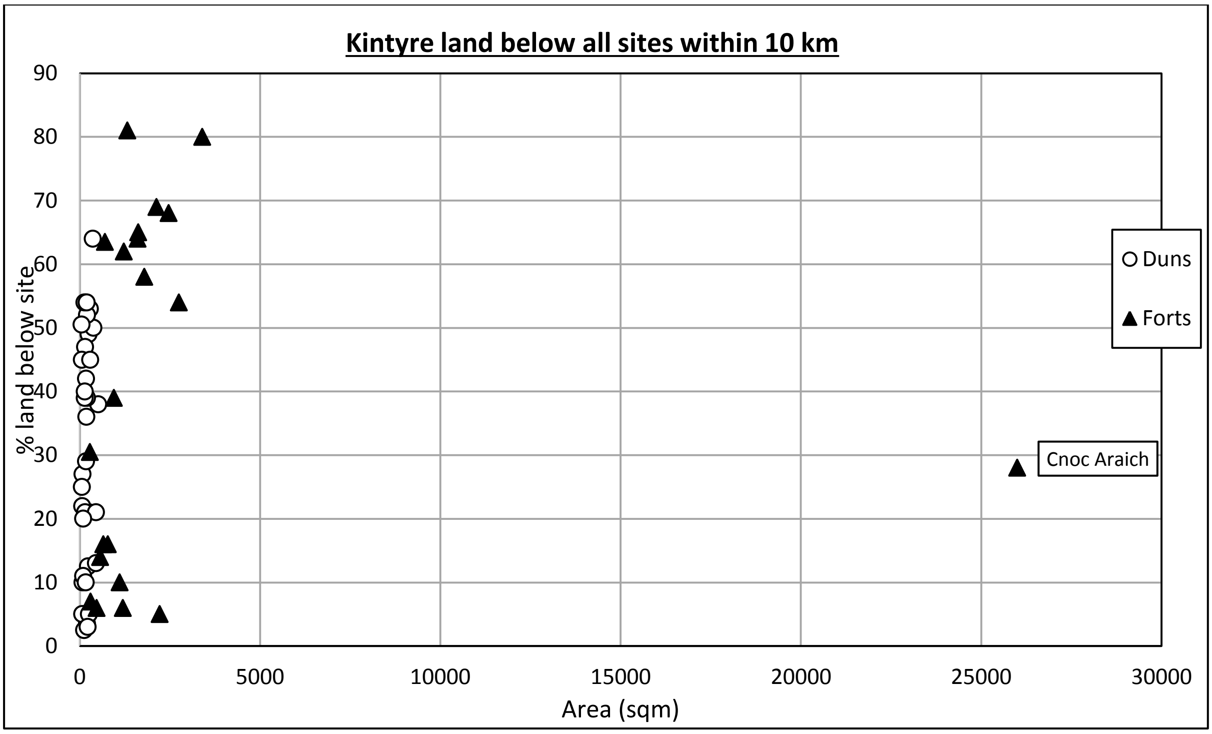

Figure 7.21: *Percentage of land below sites within a 10 km radius. Showing relative lack of prominence of Cnoc Araich.*

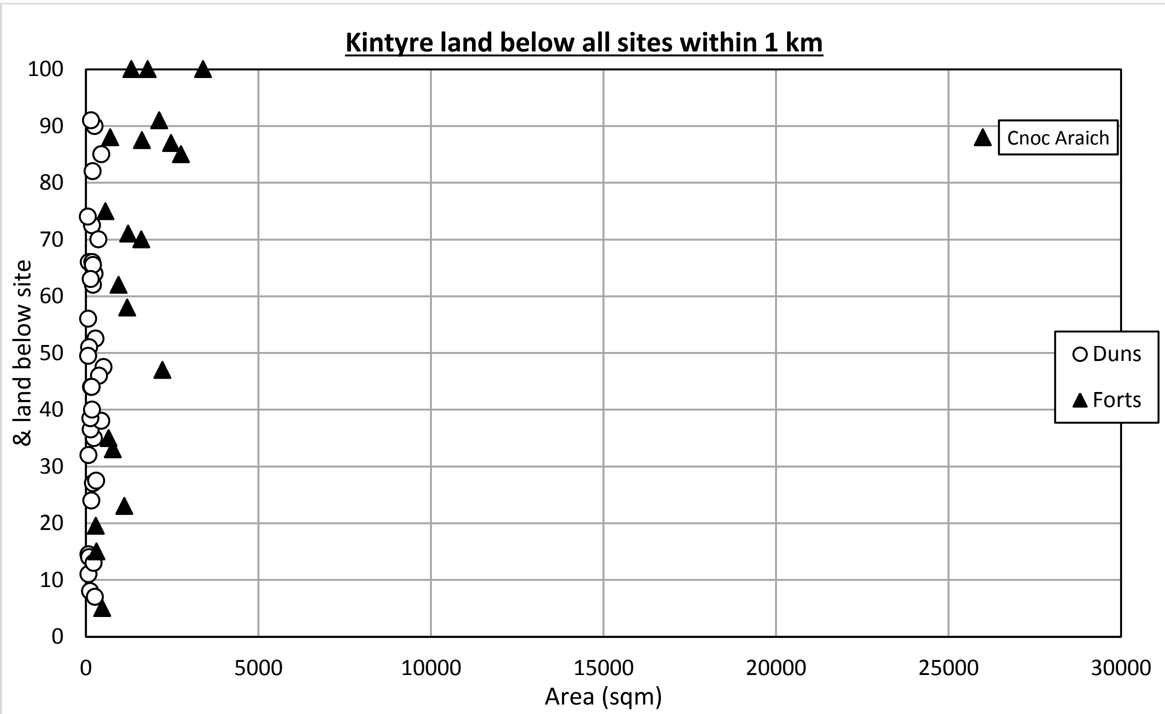

Figure 7.22: *Percentage of land below sites within 1 km radius. Showing greater local prominence of Cnoc Araich.*

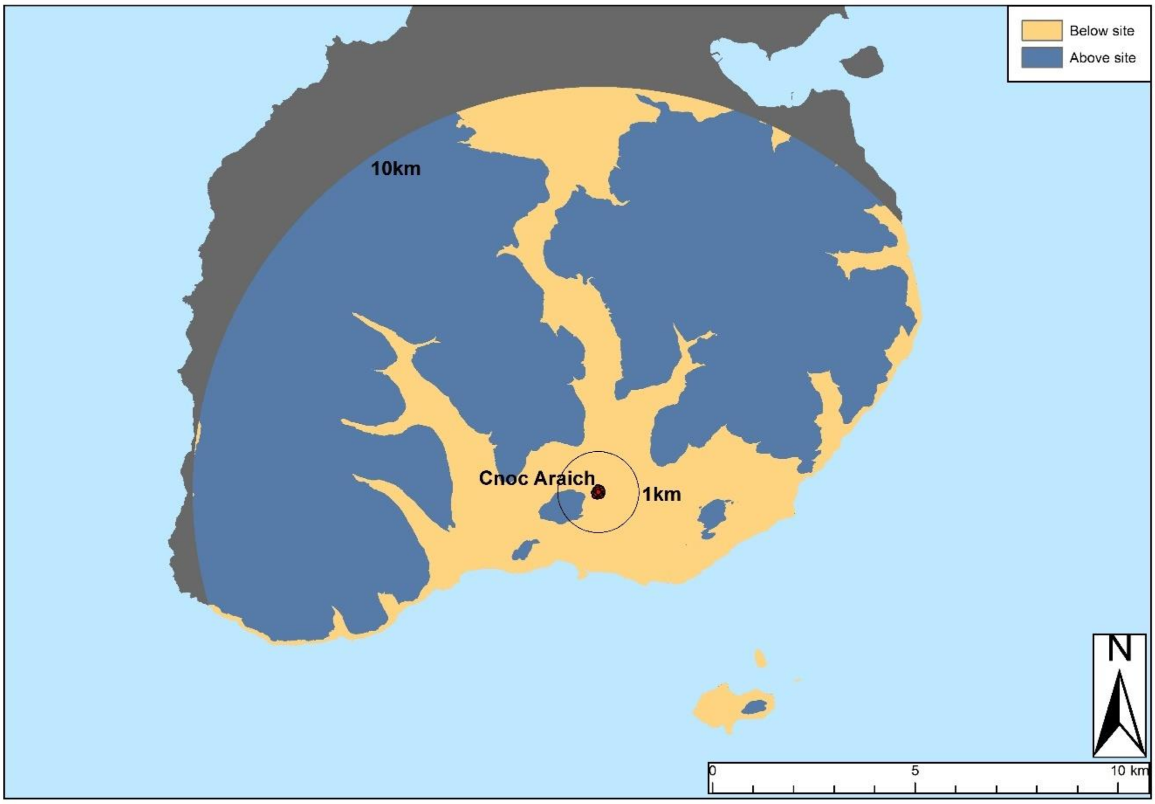

Figure 7.23: *Cnoc Araich – Land below and above within 10 km and 1 km. Most land within 10 km is above the site, including nearby ground to the west.*

Among the other forts most tend to be either very high or very low when compared to the altitude of land in their surrounding 5 km or 10 km, and if considered a distinct category they are different from sites classed as duns. The latter occupy a somewhat neutral position in the landscape, i.e. they are neither particularly high nor especially low (Figure 7.24 & 7.25). A K-S test comparing the two classes of monument shows that forts as a category are not statistically more topographically prominent than duns within their surrounding 5 km, albeit the null hypothesis was only marginally accepted (Figure 7.26). The ten largest sites (size D & E) are, however, clearly statistically more topographically prominent within that distance than sites of size A, B and C (Figure 7.27). Yet when the prominence of sites classed as forts of size A, B & C in area was compared statistically to duns the categories did not differ (Figure 7.28). There is therefore a strong chance that the smaller forts may be behaving similarly to duns in terms of their regional prominence.

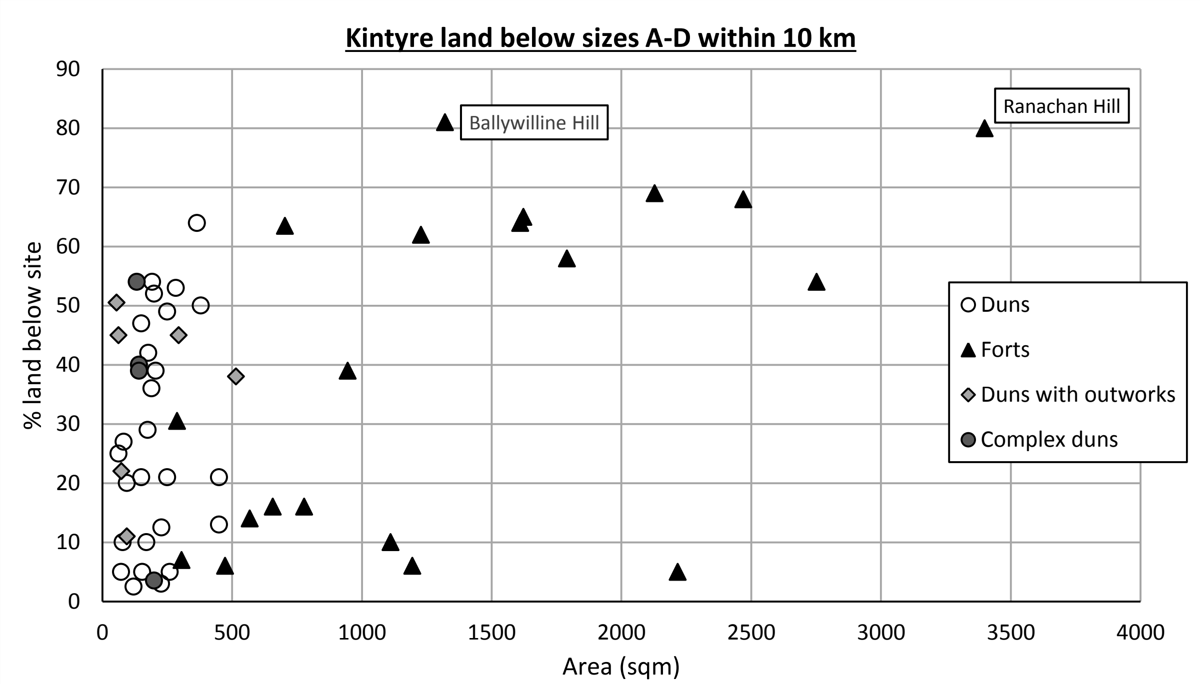

Figure 7.24: *Percentage of land below sites within 10 km. Sites classed as forts are very high or very low, while duns/smaller sites are more neutral.*

It is apparent that relative height, site size and distance from the coast appear to be linked, with sites of size D and E more likely to be inland and regionally prominent, while smaller sites are coastally located and less prominent over the longer 5 km and 10 km distances. The 1 km radius, conceivably representing the prominence of a site in its immediate locality, shows a broadly similar picture, with a clear correlation between size and relative height among all sites (Figure 7.29), except the curvilinear sites classed as duns (sites marked as circular or oval in Figure 7.30), which are widely varying in their prominence. Forts below about 1300 m^2 appear similar in their distribution to the curvilinear duns, while almost all sites above this size are situated in a topographically dominant position in their local landscape (Figure 7.29).

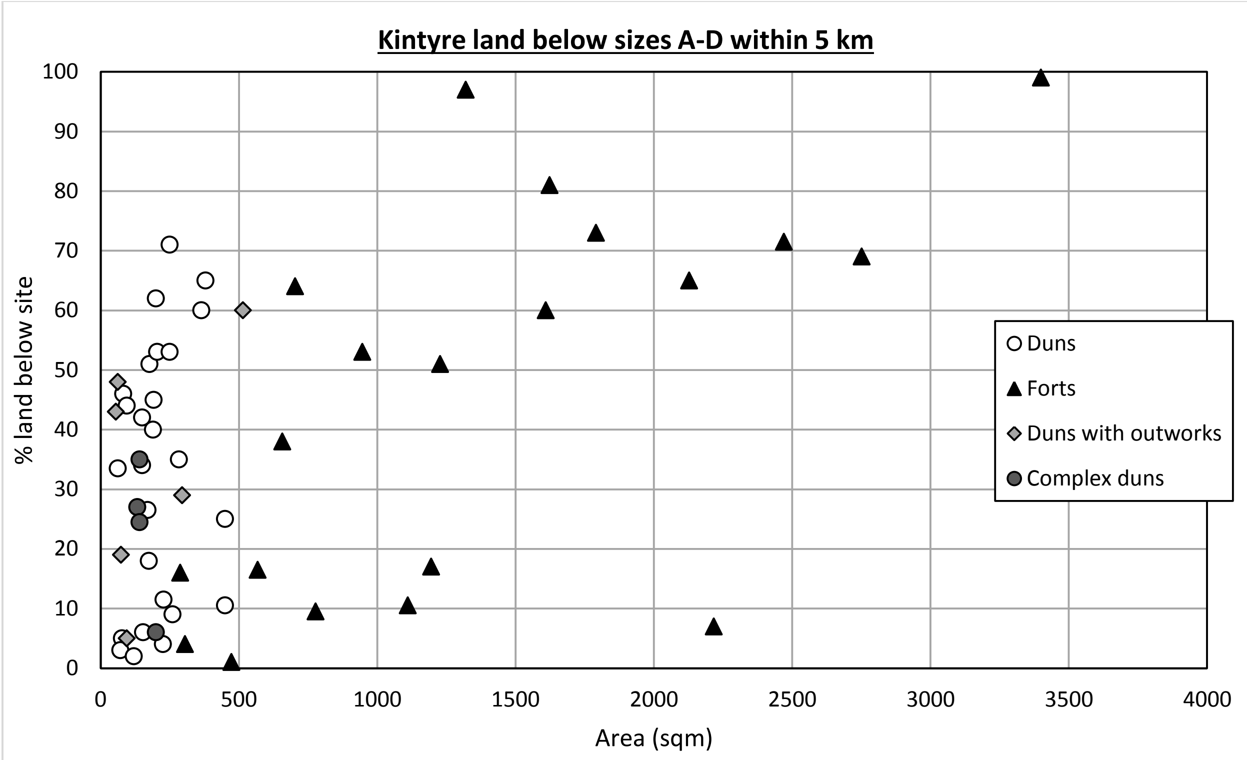

Figure 7.25: *Percentage of land below sites within 5 km. Sites classed as forts are again very high or very low, while duns/smaller sites are more neutral.*

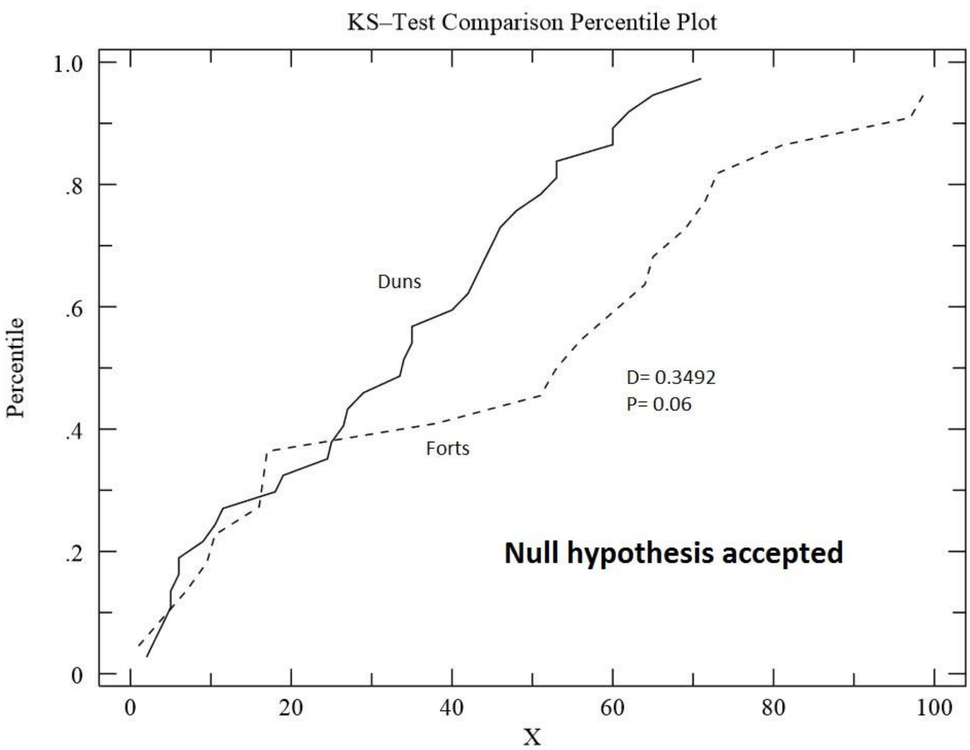

Figure 7.26: *K-S test comparing percentage of land below sites classed as duns and forts within 5 km.*

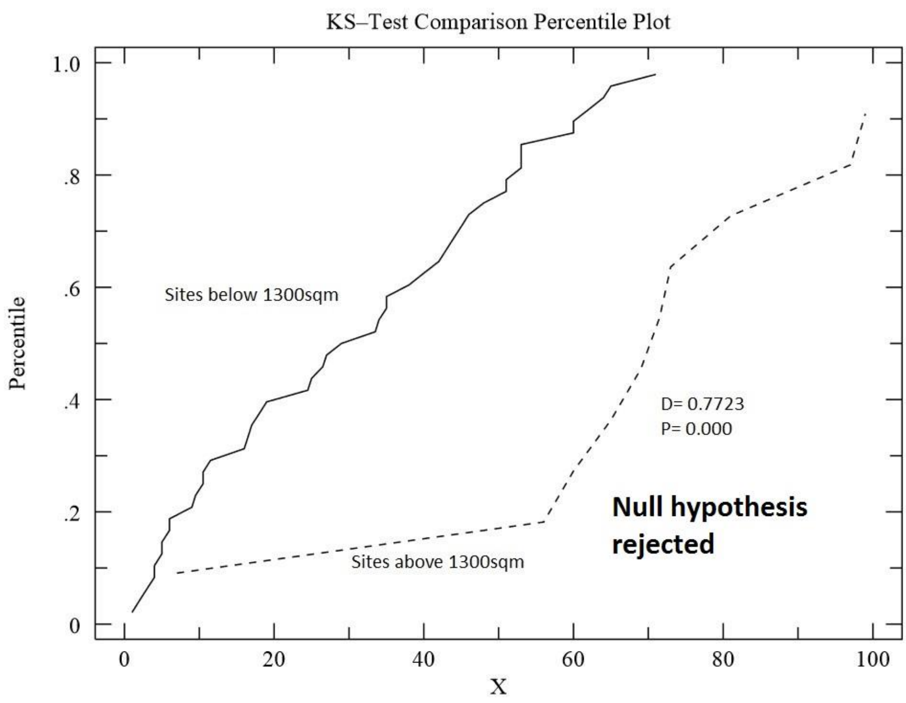

Figure 7.27: *K-S test comparing percentage of land below sites of size A, B & C with size D & E, within 5 km. This shows that the larger sites are significantly more prominent.*

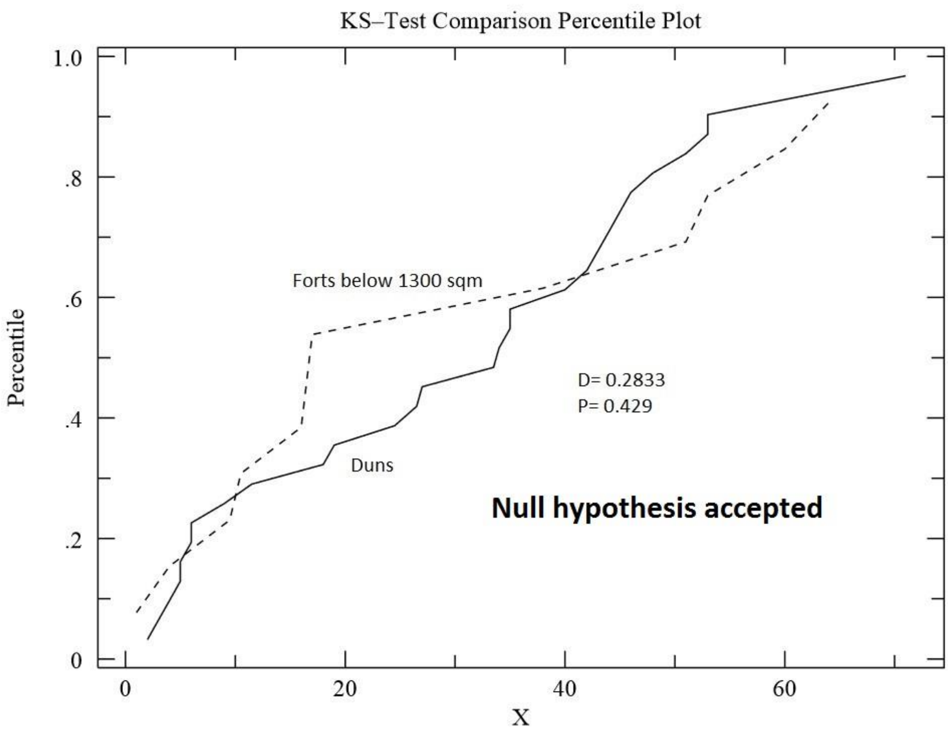

Figure 7.28: *K-S test comparing percentage of land below sites classed as forts of size A, B & C with duns within 5 km. This shows that forts and duns of this size may be similarly prominent.*

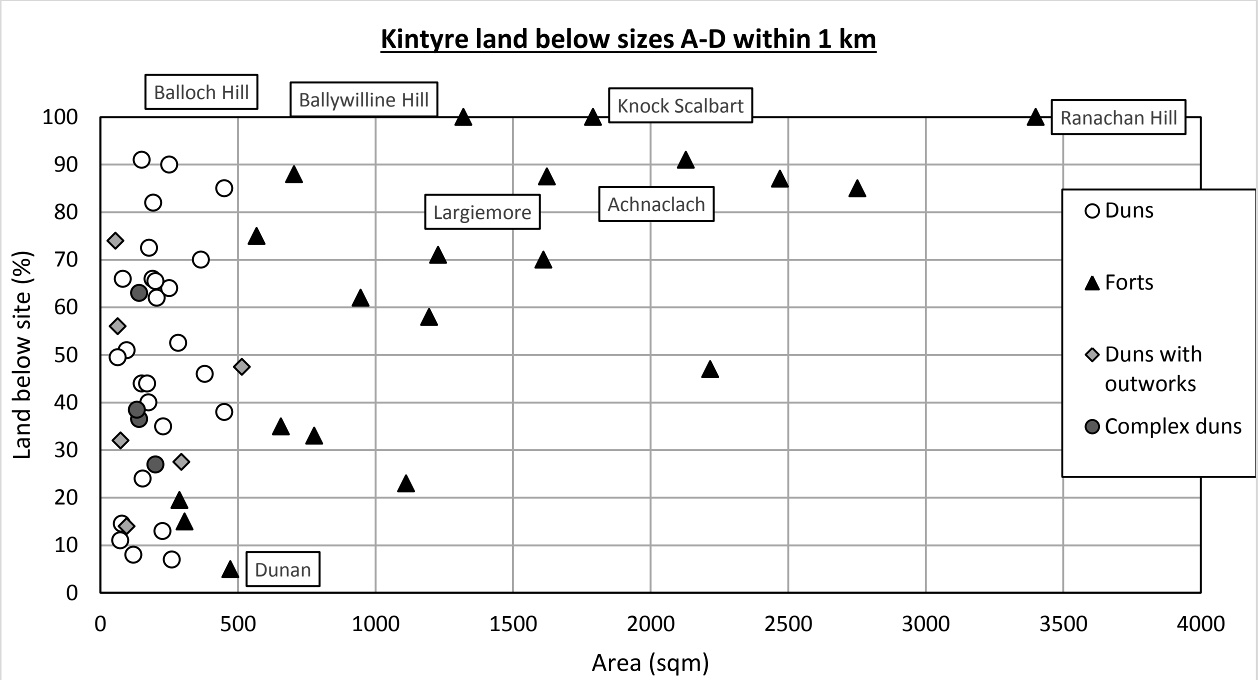

Figure 7.29*: Percentage of land below sites within 1 km. This shows a correlation between size and topographic prominence.*

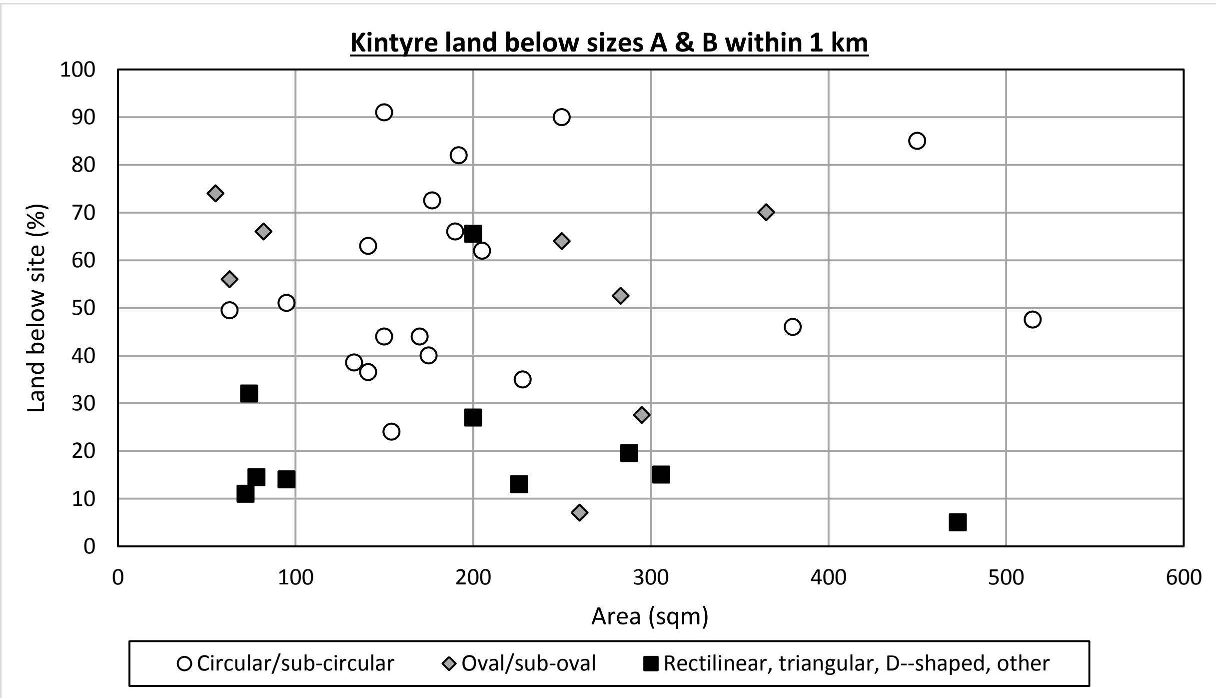

Figure 7.30*: Percentage of land below sites within 1 km. Curvilinear sites (oval and circular) vary in their prominence. Non-curvilinear sites are generally not prominent.*

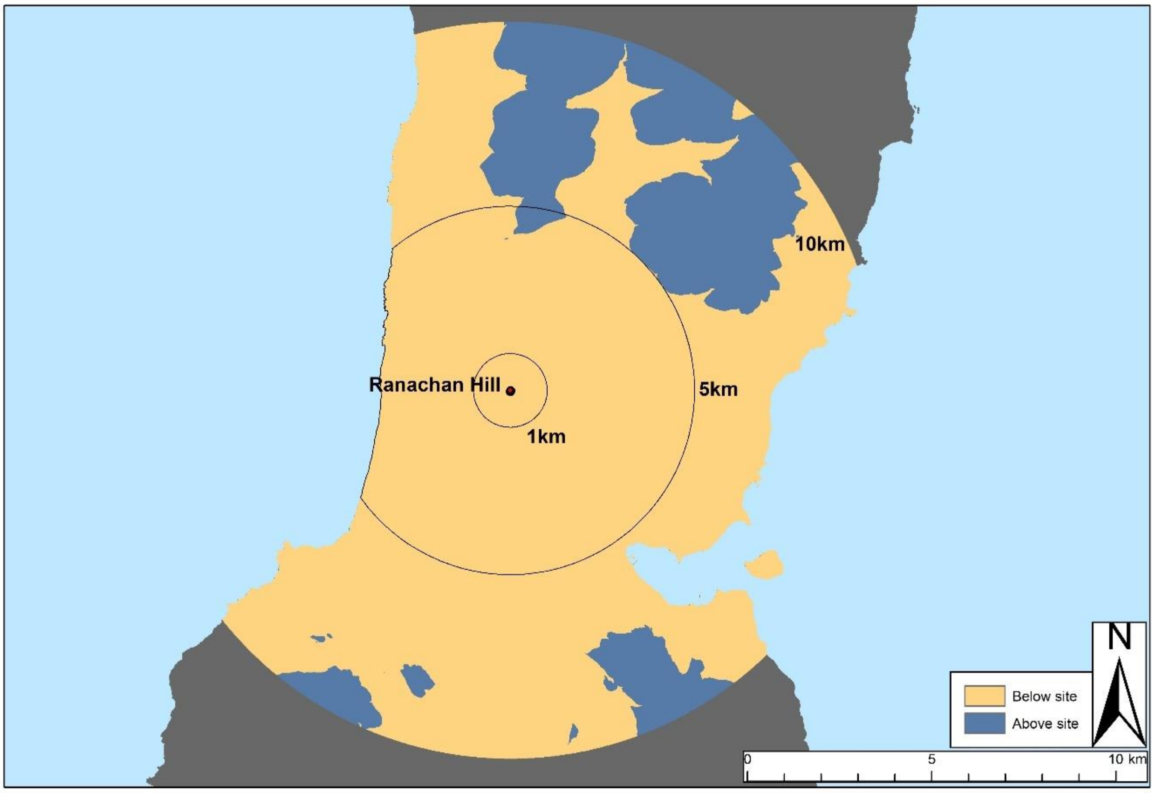

Figure 7.31*: Ranachan Hill – land below and above. The site is on one of the highest hills in this part of Kintyre.*

A good example of one of these larger sites is Ranachan Hill, which is located on the most prominent point within the Laggan area, with the nearest higher ground nearly five kilometres to the north (Figure 7.31). Ballywilline Hill and Knock Scalbart are similarly topographically prominent, with another group of sites, including Achnaclach, Largiemore and Balloch Hill positioned on the highest 15% of their surrounding kilometre, representing a second tier of prominence (Figure 7.29). These sites may not be quite as commanding in their placement as the most prominent three – Largiemore is directly overlooked by Ranachan Hill and has higher ground within 200 m of the site to the north (Figure 7.32), and Balloch Hill has higher land about 300 m away to the west. Among the sites in this grouping, almost all could be positioned on a slightly higher, more prominent point if prominence was the only consideration for site location. A third group of forts is not at all prominent within 1 km – these sites are mostly smaller and can be exceptionally weakly positioned. An example would be Dunan, a small rectilinear site at the bottom of the coastal slope on the south west of the peninsula. Only a tiny strip of land lies below this site, and the enclosure is clearly not placed to dominate the locality, or even to be effectively defensible (Figure 7.33). Arguably, this site has more in common with the rectilinear duns of Kintyre in its landscape positioning. Other less prominent sites in this grouping such as Machrihanish, Killocraw or Westport are not as extreme in their lack of prominence, but none is especially strongly positioned in their immediate landscapes, their locations not being dissimilar in pattern from many curvilinear duns. Notably, this latter group of forts is comprised, almost without exception, of those sites that are closest to the sea.

A prominent position, both locally and regionally seems important, therefore, to the location of larger enclosed sites defined by walls or ramparts. There is no *a priori* reason why this should be the case, large enclosed sites can just as easily be positioned on lower lying, flatter ground. This correlation between size and prominence may indicate a fundamental difference in site usage, site hierarchy or site defensibility between those enclosures which share these characteristics to greater or lesser degrees, i.e. those forts that are very prominent and/or large in area, and distant from the sea, may be distinctly different in those ways from sites that are less prominent, smaller and coastally located. As a cautionary note, however, the relationship between size and prominence may be reflective of taphonomy. It is possible that enclosures of size D and E exist on lower lying ground, perhaps in the Laggan area, but are not visible today.

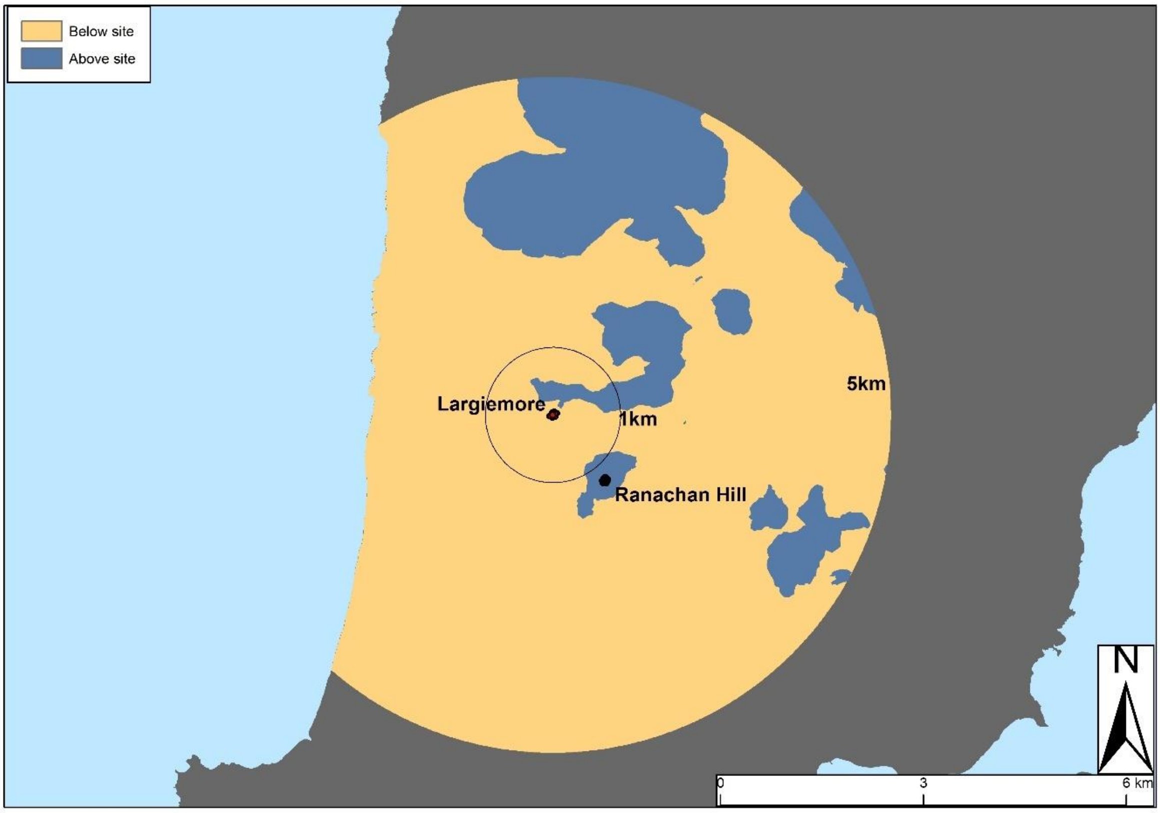

Figure 7.32: *Largiemore – land below and above within 5 km and 1 km.*

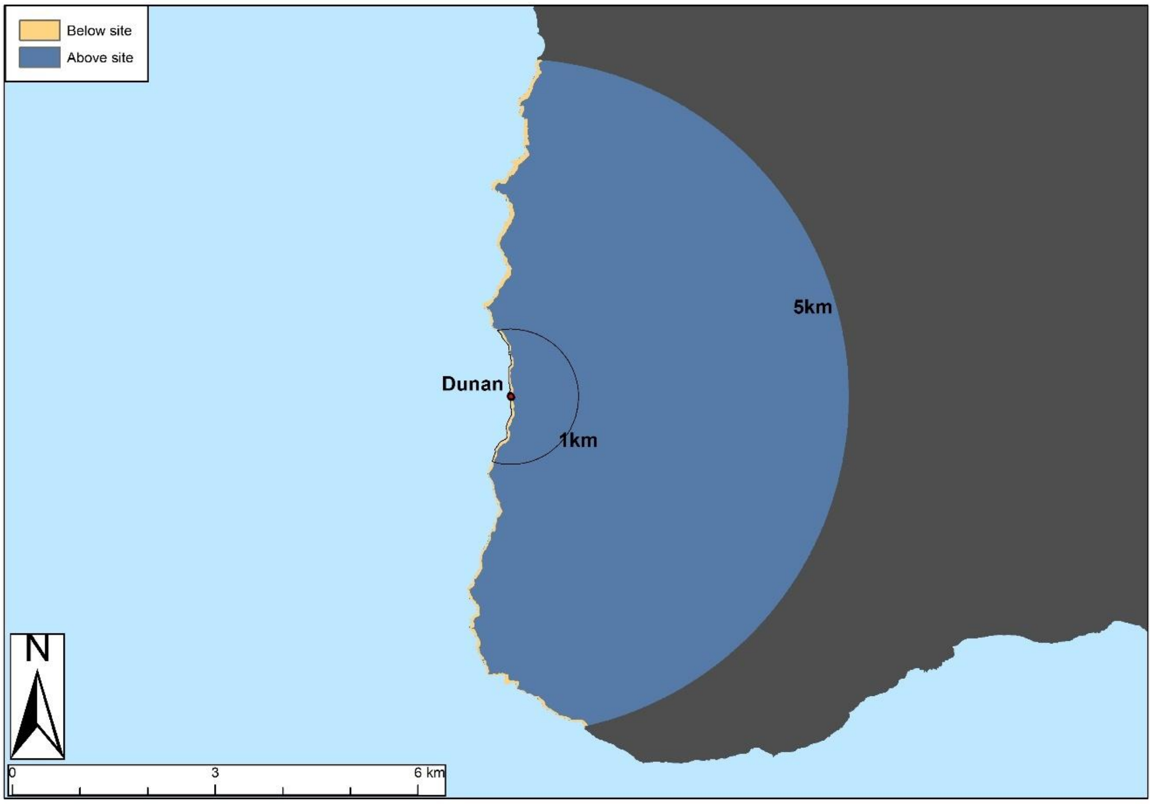

Figure 7.33: *Dunan – land below and above within 5 km and 1 km.*

Local prominence or, conversely, lack of local prominence does not seem to be a priority for the builders or inhabitants of the circular and oval sites of size A and B – the sites are distributed quite evenly across the range, with between about 20% and 90% of surrounding land beneath them. The non-curvilinear enclosures of this size, however, are almost all located on the lowest 30% of land within their surrounding 1 km, suggesting a preference for sheltered or hidden locations, or possibly prominence in a seaward rather than landward direction (Figure 7.30). This is regardless of site categorisation, and is true of the three sites under 550 m^2 that are classed as forts – Dunan, Putechantuy and Sron Uamha – all of which are rectilinear or irregular in shape.

The presence of higher ground immediately adjacent to a fort is one of Bowden and McOmish's major critiques of the traditional interpretation of hillforts as structures for which defence was an overriding priority (Bowden & McOmish 1987). If a site has higher land nearby its status as a defensive structure may be called into question, as ranged weapons such as slings or arrows could more easily hit the defenders, or, in the absence of ranged weapons, the interior could be more effectively observed. Eleven out of twenty enclosed sites classed as forts have no higher ground in their immediate surroundings, defined here as a 200 m radius, a distance chosen to be representative of possible sling range (Figure 7.34; Bowden & McOmish 1987). Two sites, Saddell House and Largiemore, have a tiny amount of land immediately overlooking them, but in both cases this small area of higher ground is only slightly higher than the interior of the fort. The military nature of the remaining seven forts, including Machrihanish and Westport, could certainly be called into question however – if defence was the overwhelming impetus behind the building of these structures there are better places to put them in the landscape.

Seven sites classed as duns have no land immediately overlooking them, including Belfield and Cullan Doon both of which are built in the interior of larger enclosed sites, but also a range of other sites such as the tiny oval enclosure of Cnoc Sabhail or the sub-circular site of Balegreggen Hill. All curvilinear sites of size A and B have more than half of their surrounding 200 m below them, suggesting that prominence within the immediate area of construction was somewhat important, even if within the wider landscape or locality it may not have been. Non-curvilinear sites of size A and B are again less prominent than curvilinear examples, eight out of ten of the former sites being positioned at locations with less than 62% of land within their immediate area of construction below them (Figure 7.35), i.e. in positions of average prominence at best.

Statistically, if sites defined as forts are treated as a single category in terms of land below within 200 m their topographic prominence is statistically different to duns (Figure 7.36). When comparing sites of size A, B and C that have been classed as forts to duns of that size the groupings do not differ, and therefore it is likely that duns and the smallest forts are similarly topographically located in their immediate landscape (Figure 7.37). This would suggest that forts larger than this are significantly different to both duns and smaller forts. Unsurprisingly then, sites of size D and E, all classed as forts, were statistically different to size A, B and C at a confidence level of 100%, and to all forts of size A, B and C at a confidence level of 99.8% (Figure 7.38 & 7.39). There is, however a certain inherent bias here, with larger sites taking up more of the 200 m radius area themselves.

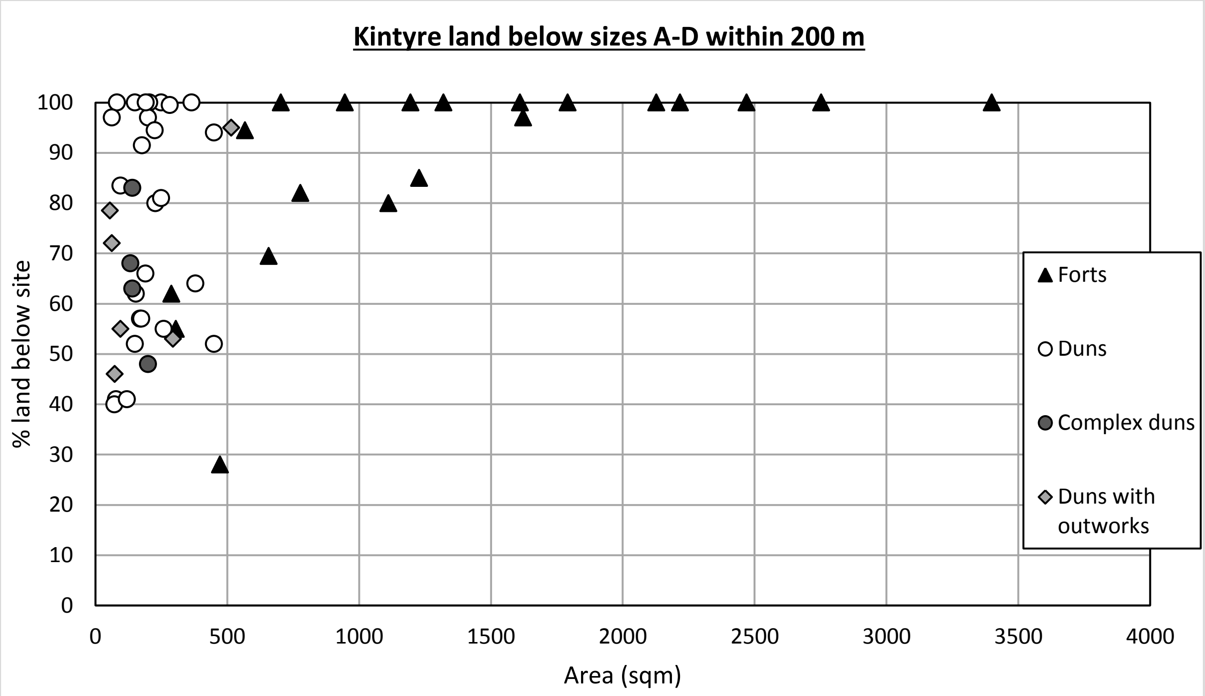

Figure 7.34*: Percentage of land below sites within 200 m. This shows that there is a correlation between the fort classification, as well as site size, with topographic prominence within a site's immediate surroundings.*

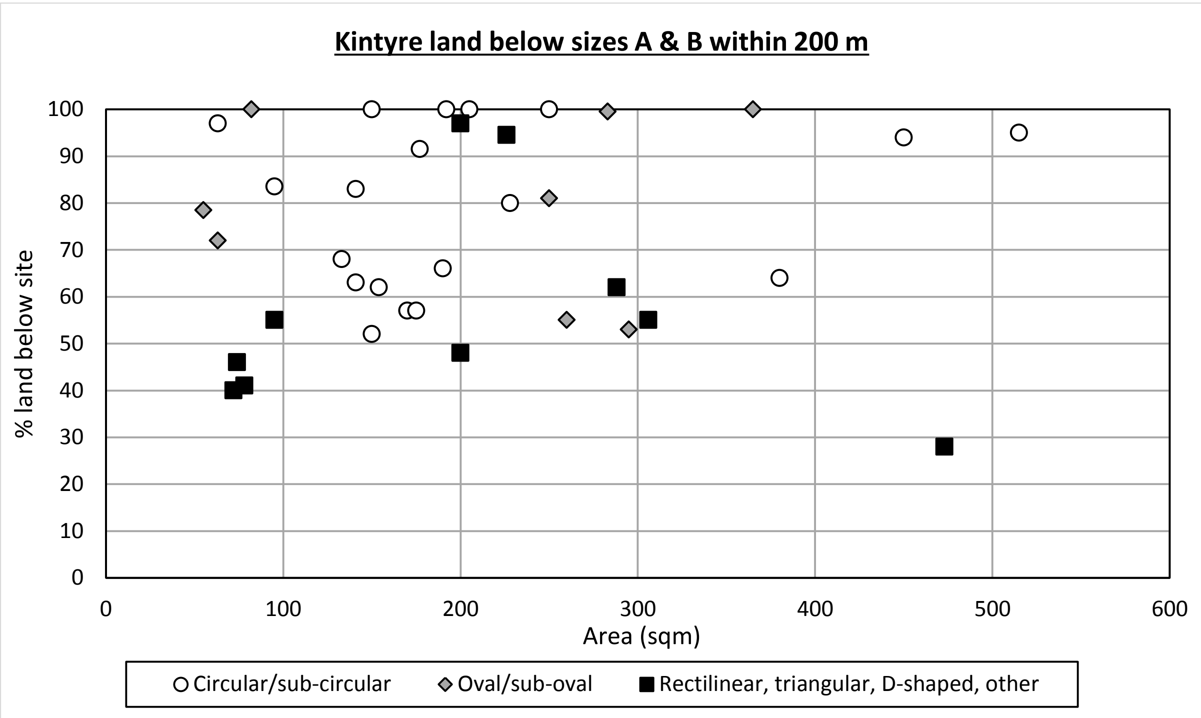

Figure 7.35*: Percentage of land below sites within 200 m. Non-curvilinear sites have a significant percentage of ground above them, for curvilinear sites that is less likely to be the case.*

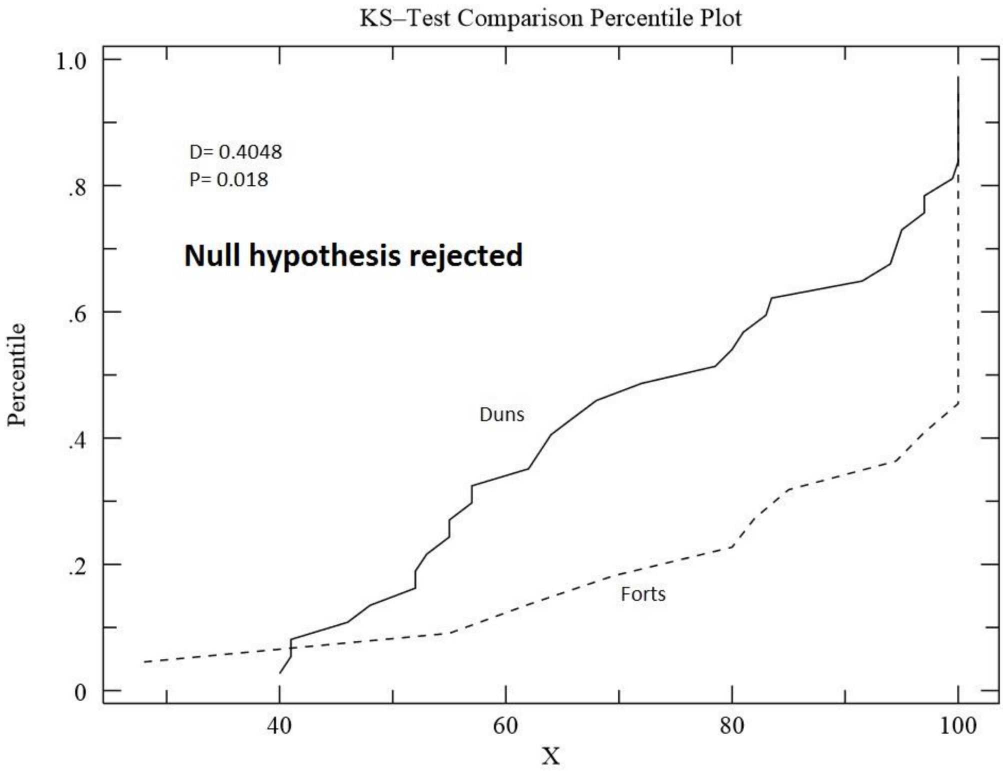

Figure 7.36*: K-S test comparing percentage of land below forts and duns within 200 m. Sites traditionally classed as forts are much more prominent as a dataset than duns.*

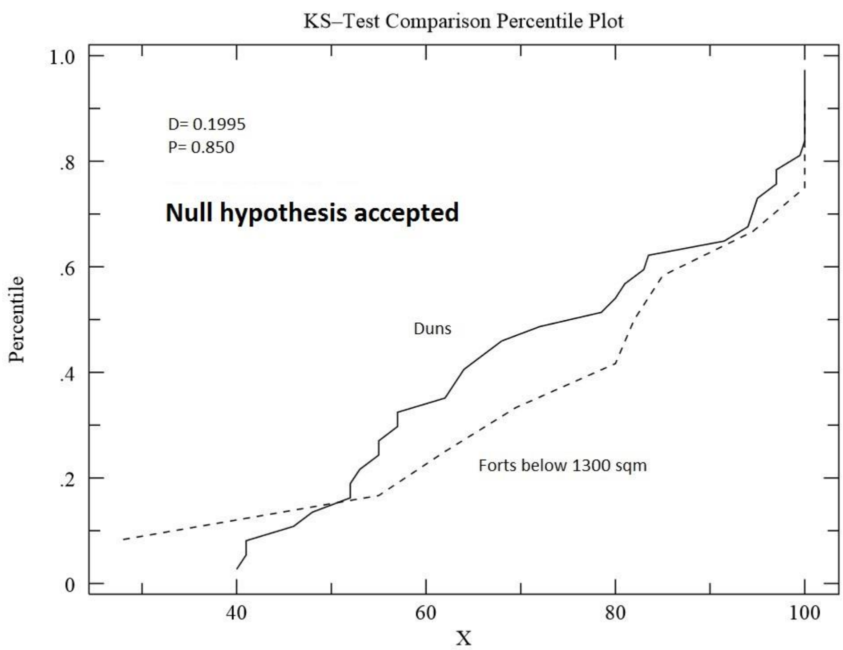

Figure 7.37*: K-S test comparing percentage of land below sites classed as duns with forts of size A, B and C within 200 m. This shows that there is little difference between the RCAHMS*

classifications, and suggests that site size, and the 1300 m^2 boundary, may be more important than the fort or dun classification.

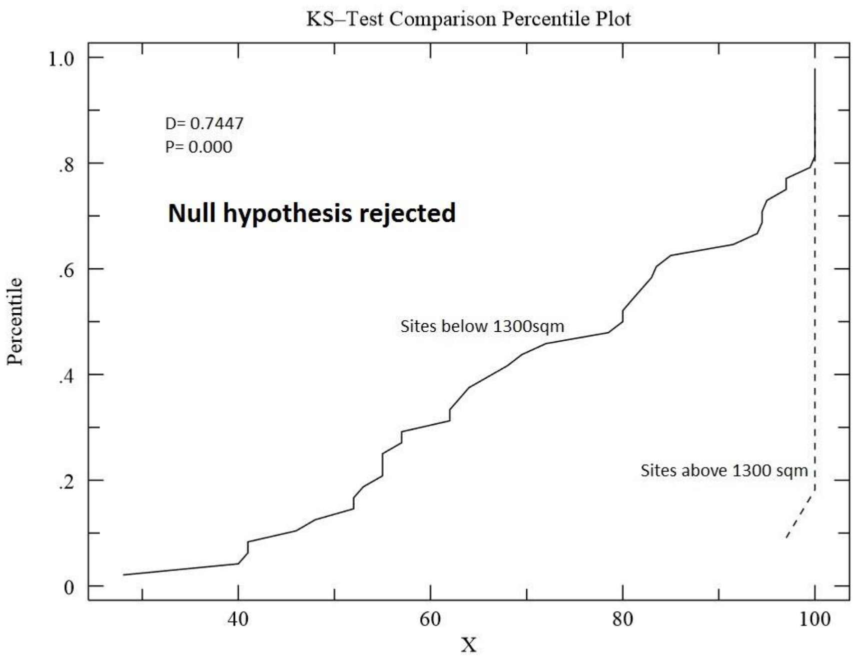

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***Figure 7.38**: K-S test comparing percentage of land below sizes A, B & C with size D & E within 200 m. This shows that smaller and larger enclosed sites differ markedly, and suggest that the 1300 m^2 boundary may be significant.*

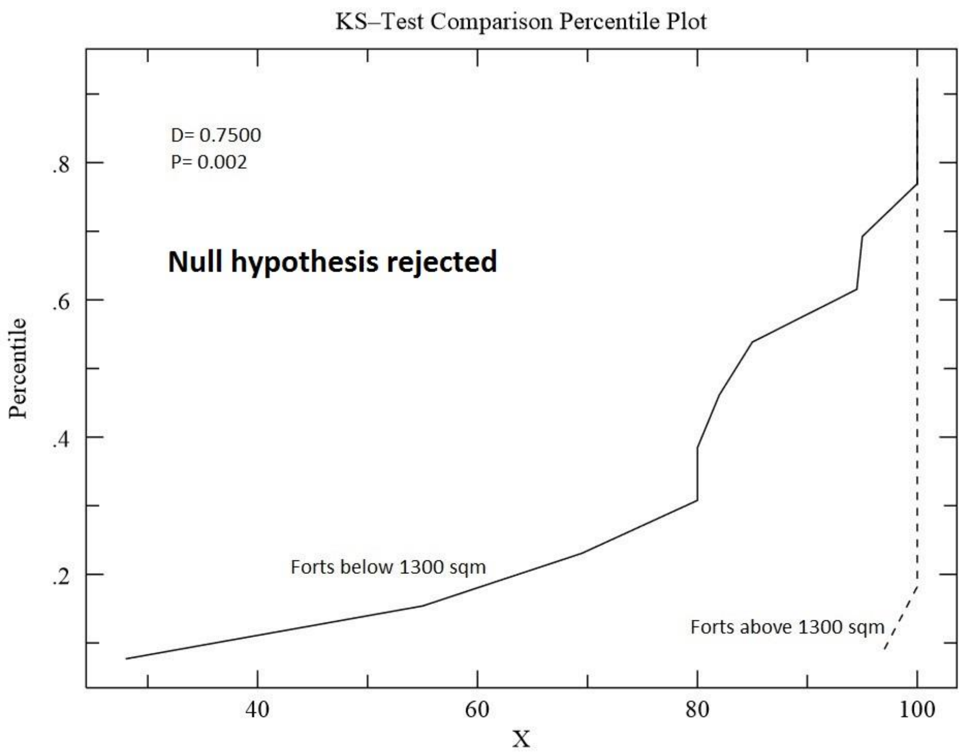

***Figure 7.39**: K-S test comparing percentage of land below sites traditionally classed as forts of size A, B & C with size D & E, within 200 m. This shows that the size classes differ fundamentally regardless of the dun/fort categorisation.*

7.2.3 Site visibility in the landscape

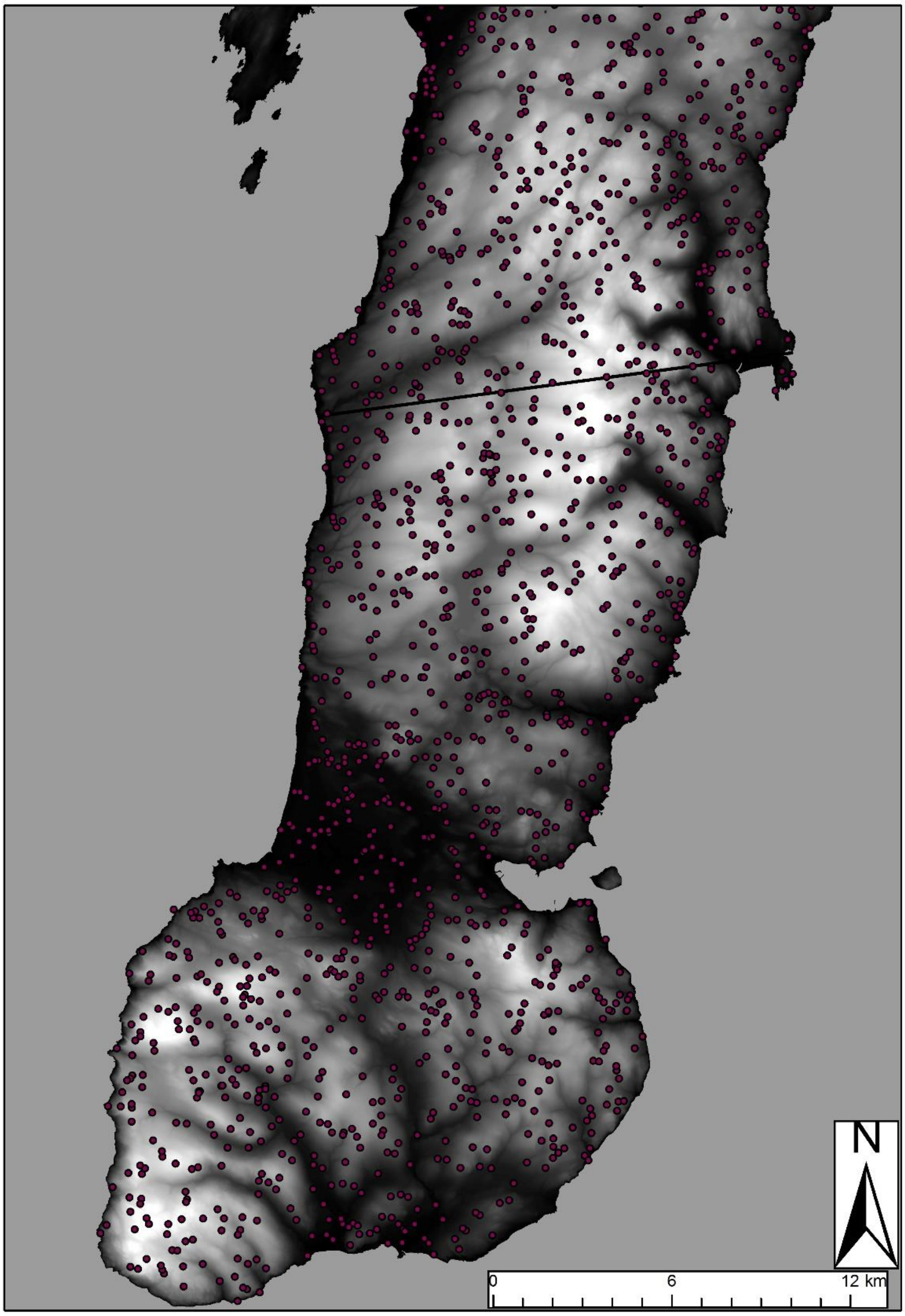

Figure 7.40: *1500 randomly-generated points used for land cumulative viewshed, overlaid on 5 m DTM. Points continue north of the black line, which represents the edge of the case study area.*

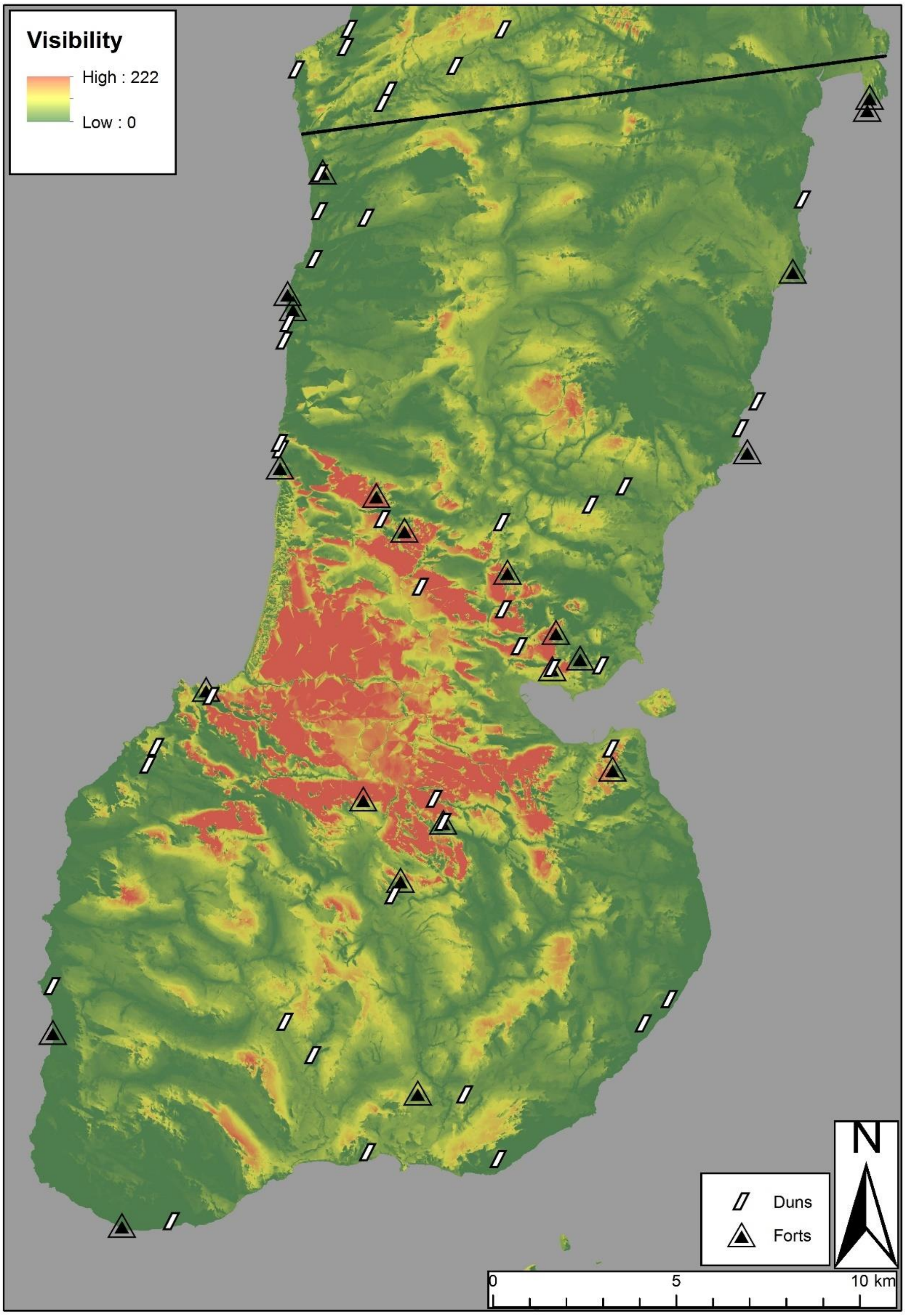

Figure 7.41: *Results of cumulative viewshed representing inherent visibility from land of case study area.*

The visibility of Kintyre south of Carradale from land has been measured using a cumulative viewshed from 1500 random points, as described in Chapter 6.3.3. In order to avoid the edge effect problem, the randomly generated points were also placed outside the case study area as far as approximately 6-8 km to the north of the case study limit (Figure 7.40 & Figure 7.41). A second cumulative viewshed measuring the visibility of the landscape from the sea will be discussed in Section 7.2.7**.**

The visibility of sites was explored using both the mean visibility on and inside their defences, and the most visible pixel on or inside their enclosing works. The former was compared with the mean visibility of the landscape in order to determine whether the locations chosen for sites were more visible than an average point in the landscape. The results of this can be seen in Table 7.1 below. A 5 m by 5 m pixel in the interior of enclosed sites can be seen by 35 random points on average, compared to the mean landscape visibility of 21. Sites classed by RCAHMS as duns are less visible than forts in this regard, with sites of sizes D and E, the most topographically prominent enclosures, comfortably the most visible.

Type	Most visible pixel	Mean visibility of site footprint
Total case study area		21
All sites	58	35
All Duns	41	30
All Forts	87	44
Size A	39	30
Size B	38	26
Size C	78	43
Size D & E	117	55

Table 7.1: *The visibility of sites and the general landscape in southern Kintyre, using both the most visible pixel and the mean visibility of the interior.*

If the mean visibility of the land on which sites were placed is compared to the landscape as a whole, size C, D and E are almost universally more visible than an average point in the landscape (Figure 7.42 & 7.43). Size A and B, including all duns, are distributed above and below the black line in F Figure 7.43, suggesting that visibility in the landscape, at least over longer distances, is not a specific priority for those who constructed them. Great diversity is evident among size A and B, with Cnoc Sabhail the second most visible site – only the interior of Ranachan Hill has a higher mean visibility from land.

When using only the most visible pixel in the interior of a site as the basis of the study the difference between the forts and duns classes seems to be magnified, and there clearly appears to be an even more apparent relationship between size and visibility of location. Cnoc Araich is very mediocre in terms of its landscape visibility (Figure 7.44). Looking at sites smaller than Cnoc Araich in more detail, the most visible sites of size C and D are Ranachan Hill, Knock Scalbart and Ballywilline Hill, with Balloch Hill, Achnaclach, Largiemore and Cullan Doon all visible from more than 100 of the randomly generated points (Figure 7.45). These sites all equal or exceed the most visible of size A & B in terms of visibility, and among the most visible of the latter category two, Belfield and Cullan Doon, are located in the same positions as forts.

Arguably there is a step change below about 550 m^2 apparent in this scatter chart, with sites less visible in the landscape below this size. Non-curvilinear or irregular enclosed sites are among the least visible of size A and B in Figure 7.46, but the difference in visibility between them and circular or oval sites is less apparent than in the topographic prominence or coastal proximity studies above (Figure 7.30 & 7.35). Even so, the former grouping is likely to be less visible than the latter at a statistically significant confidence level (Figure 7.48).

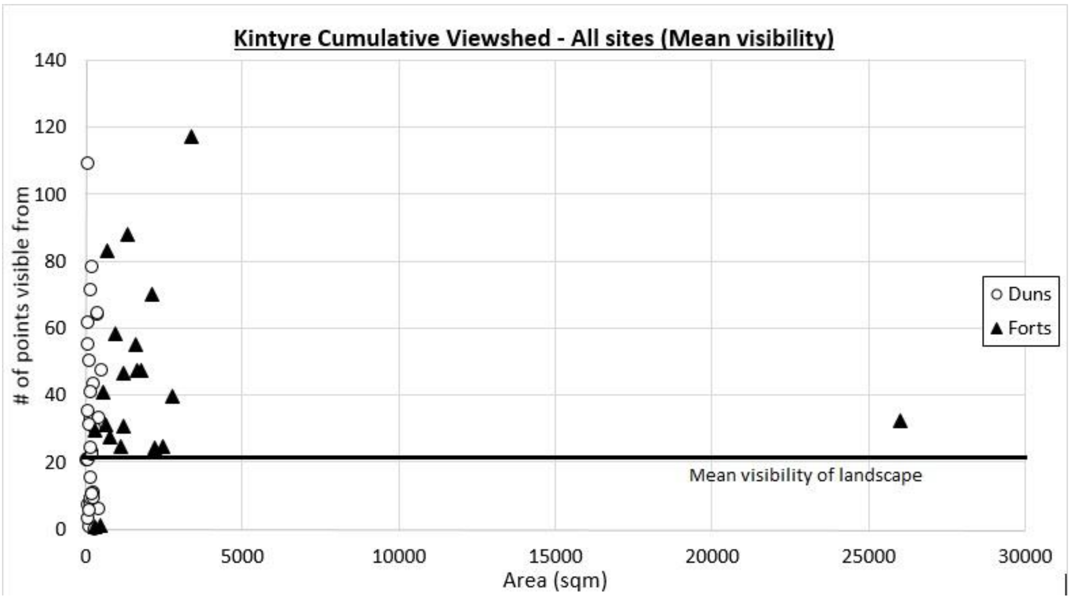

Figure 7.42: *The number of randomly-generated points that can see the site, using the mean visibility of pixels on and within the enclosing works. The line indicates the mean visibility of a pixel in the landscape. This shows larger sites/sites classed as forts have a*

mean internal visibility that is almost universally greater than the landscape, while the smallest sites/duns do not.

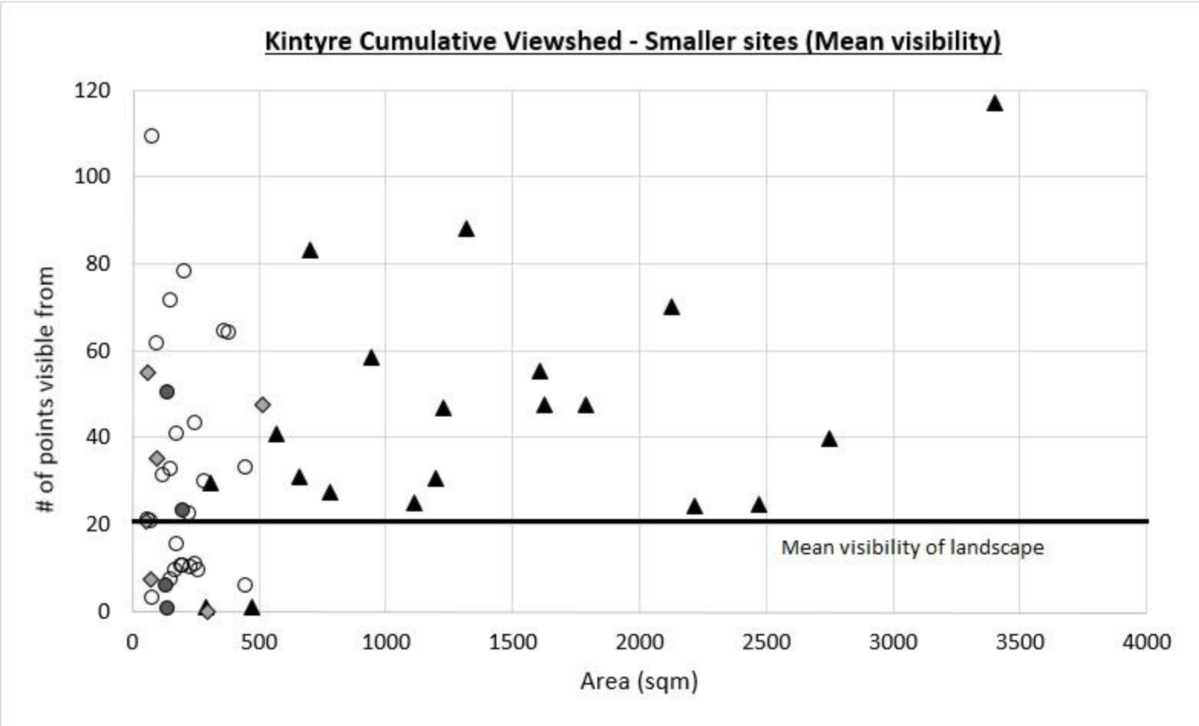

Figure 7.43: *The number of randomly-generated points that can see the site, using the mean visibility of pixels on and within the enclosing works of* size *A-D. This shows in more detail the pattern apparent in Figure 7.42.*

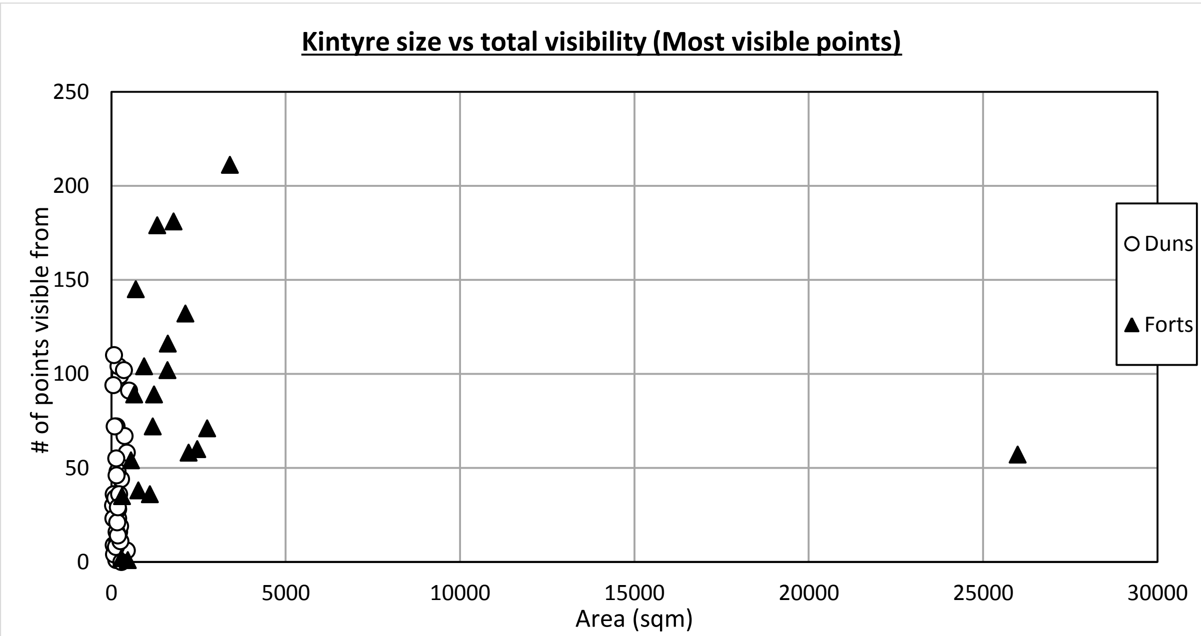

Figure 7.44*: Site area compared to number of randomly-generated points that can see the site, using the most visible pixel in the interior of each enclosed site.*

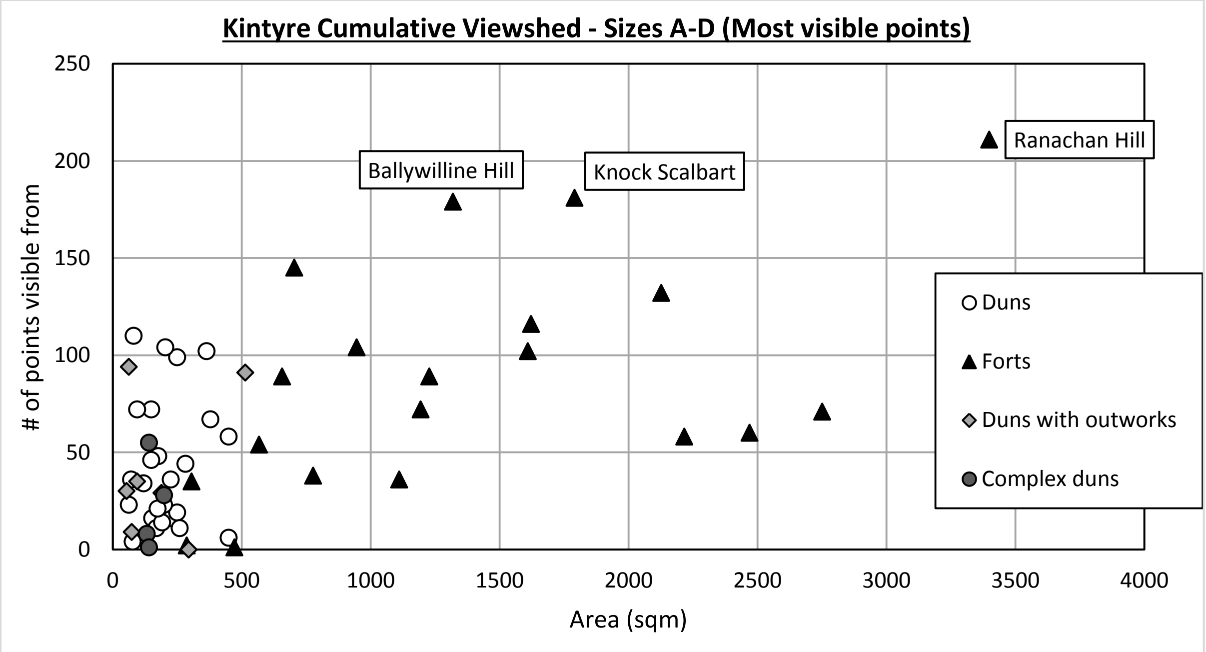

Figure 7.45*: The number of randomly-generated points that can see the site, using the most visible pixel in the interior of each enclosed site. Showing that sites of size C & D are more visible in the landscape than most of size A & B.*

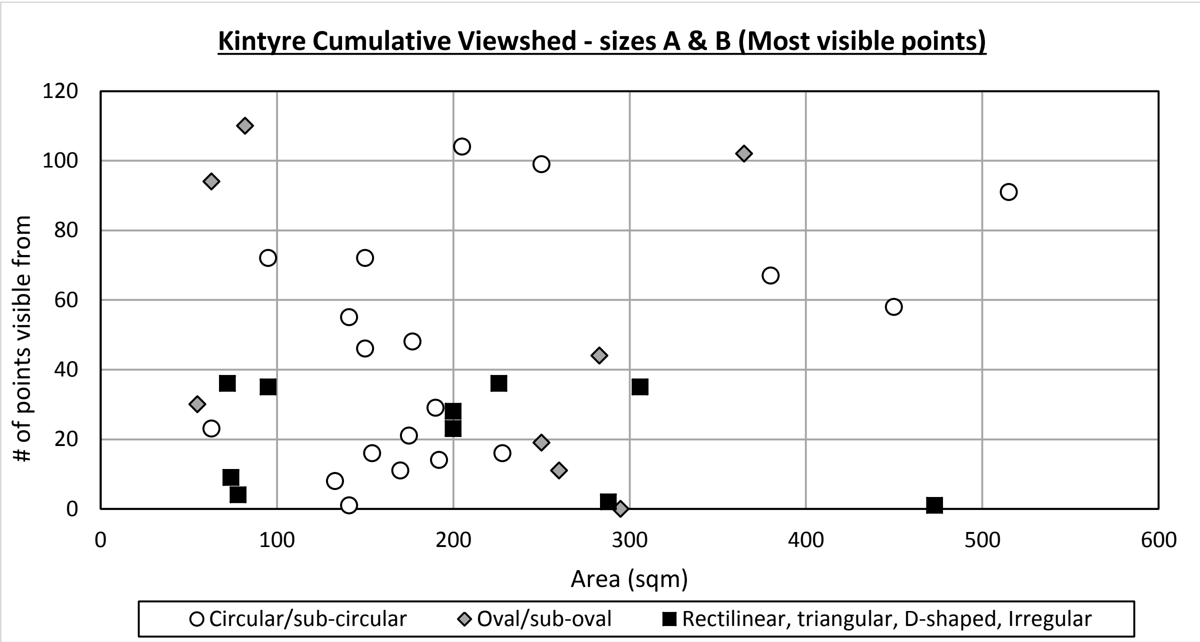

Figure 7.46*: The number of randomly-generated points that can see the site, using the most visible pixel in the interior of each enclosed site. Showing that non-curvilinear sites of this size are not very visible from land.*

If the data is compared using a K-S test it is apparent that sites classed by RCAHMS as forts are 99.5% likely to be different statistically as a group from duns (Figure 7.49). Specifically, they are almost certainly more visible than sites classed as duns. Sites of size D & E are statistically likely to be more visible when analysed as a group than total sites, and enclosures classed as forts of size A, B & C, respectively (Figure 7.50 & 7.51). Therefore it appears as if size D again comprises a distinct grouping whose position in the landscape differs from that of all smaller sites (size E is only Cnoc Araich). Finally, sites classed as forts of size B and C are not statistically more visible than duns, showing that the categories are unlikely to be different in terms of the visibility of their locations, albeit the null hypothesis was closer to being rejected than in the more local studies of topographic prominence above (Figure 7.52).

Ten hilltop enclosures (all sites positioned on hills of between 100 m and 250 m above sea level that have some topographic prominence) were compared statistically with the visibility characteristics of all 17 hilltops in the case study area between those heights that did not have a fort located on them (Figure 7.47). The most visible pixel in the interior of the sites was contrasted with the most visible point on each hilltop, and the results of the Kolmogorov-Smirnov test are shown in Figure 7.53. There is a statistically significant likelihood that the hilltop enclosures and the hilltops comprise two distinctively different datasets, with the sites more visible than the hilltops. Much of this can be put down to the absence of sites on prominent hilltops around Southend, a region that is generally less visible from land than the hilltops around the Laggan. It cannot be assumed that this is definite evidence for deliberate positioning of forts on visible hilltops over less visible ones, as most hilltops in the Laggan area have enclosed sites on them – there are few fort-less hilltops of this height with which visibility characteristics can be contrasted, and there may merely have been a preference for locating such sites on prominent locations close to the Laggan. Significantly the two hilltops that do overlook the Laggan that do not appear to have forts on them are very visible. The hills, Tirfergus Hill and Skerry Fell Fad, lying to the south, are 260 m and 240 m above sea level respectively and are the second and third most visible hills of around this height in southern Kintyre after Ranachan Hill. It would appear, therefore that the suitability of site altitude may have been a more important determinant for site location than visibility, both hills being slightly above the three highest forts. The site at Balloch Hill (152 m OD) is overlooked by Tirfergus Hill – the latter location was, at 260 m, presumably just too high for convenient settlement, or too far away from the low ground of the Laggan. This preference for positions lower than Tirfergus Hill and Skerry Fell Fad appears to support a potential hypothesis that the upland forts were definitely places of domestic settlement for at least part of the year, and not sites for which favourable living conditions were completely overridden by the desire for topographic prominence or visibility.

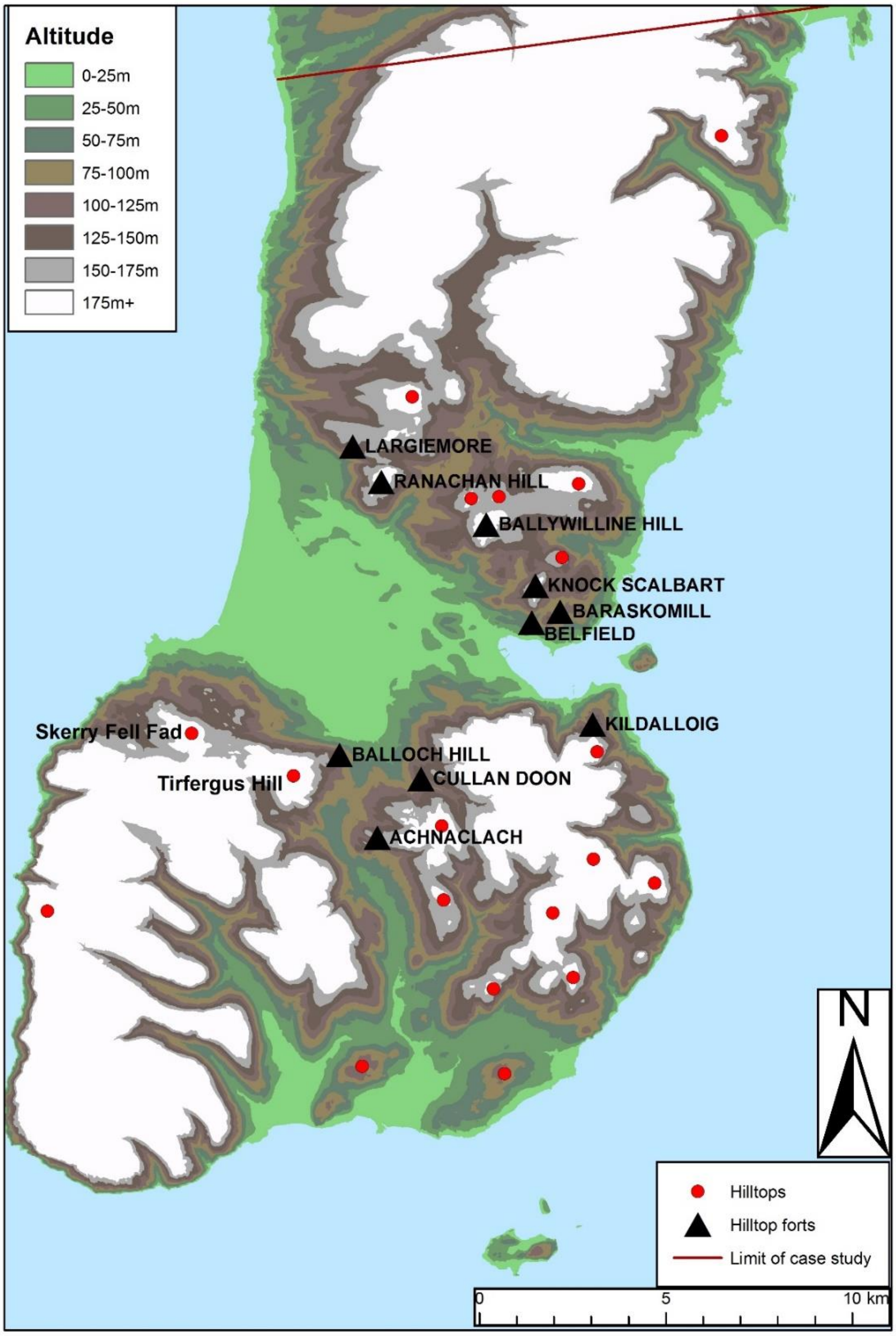

Figure 7.47: *Sites and hilltops used for visibility comparison.*

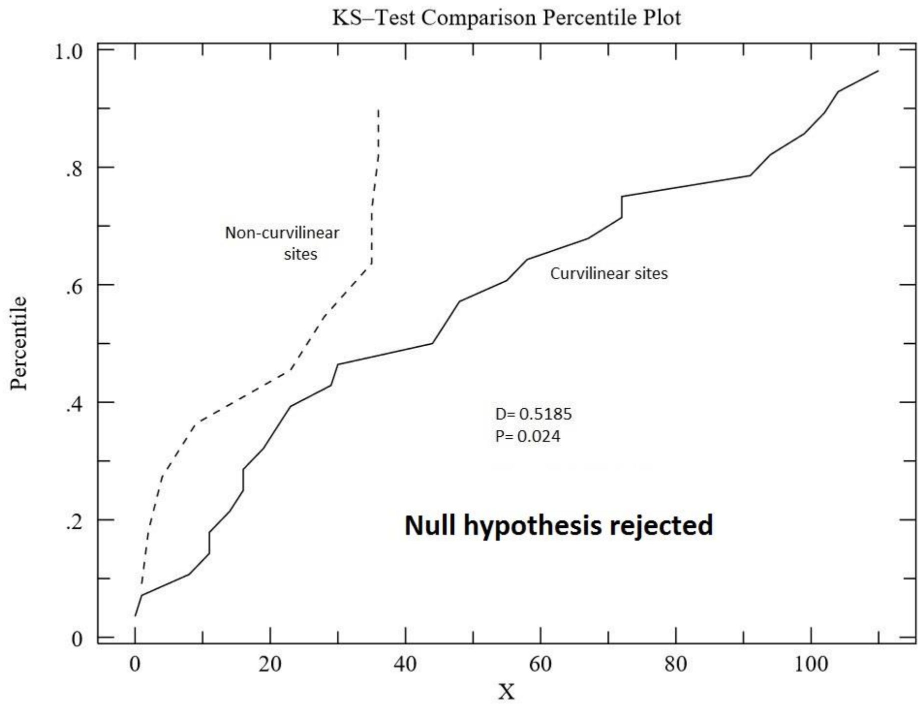

Figure 7.48*: K-S test comparing the inherent visibility of the positions of size A & B sites that are curvilinear with those that are non-curvilinear. This shows that the curvilinear sites are strongly likely to be in more visible positions.*

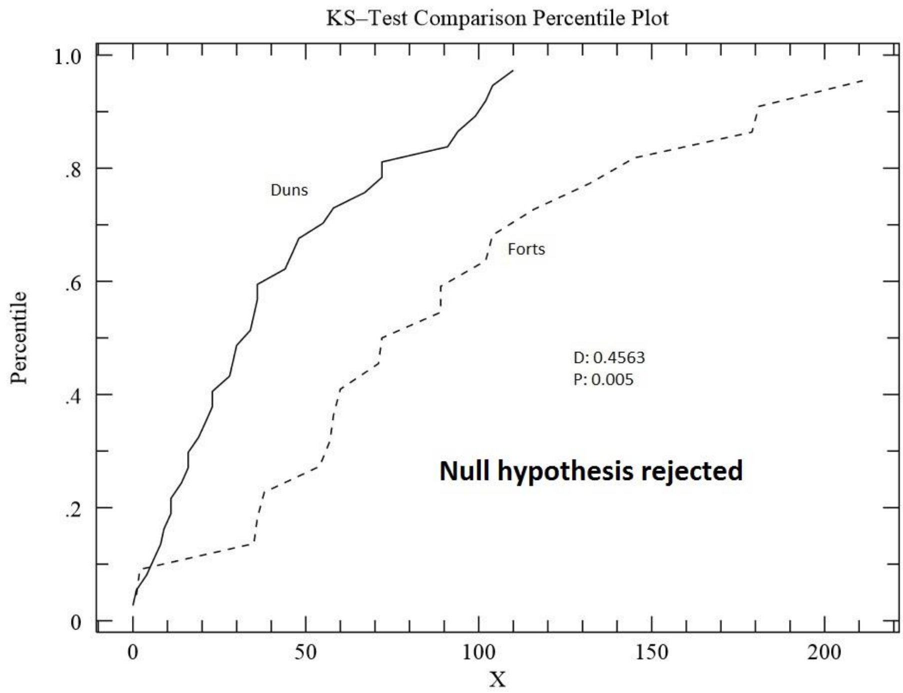

Figure 7.49*: K-S test comparing the inherent visibility of the positions of sites traditionally classed as duns and forts. This shows that the fort class is comprised of more visible sites.*

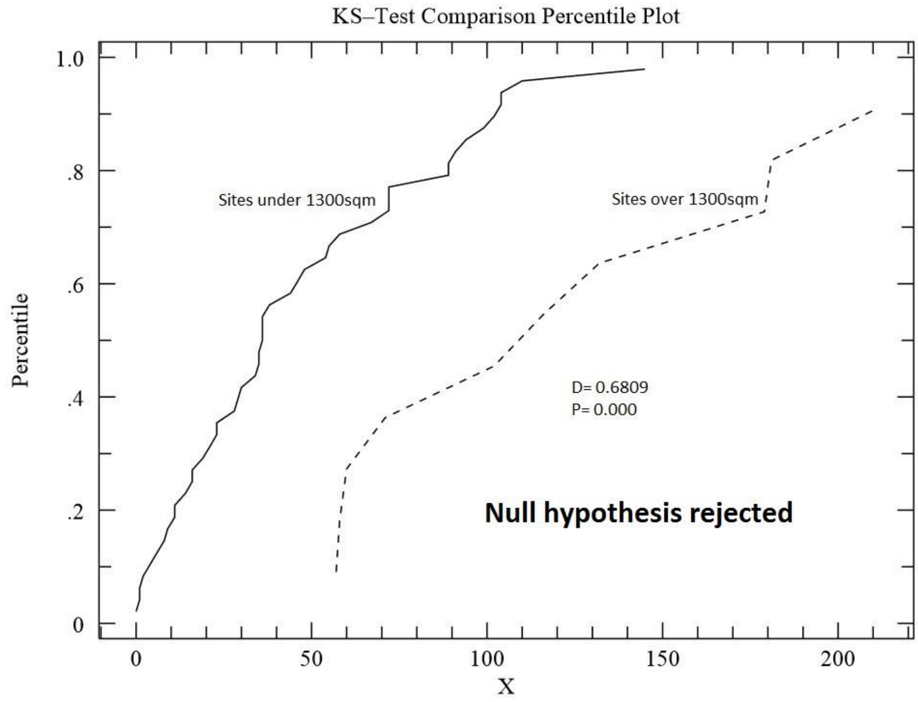

Figure 7.50*: K-S test comparing the inherent visibility of the positions of sites of size A, B & C with size D & E.*

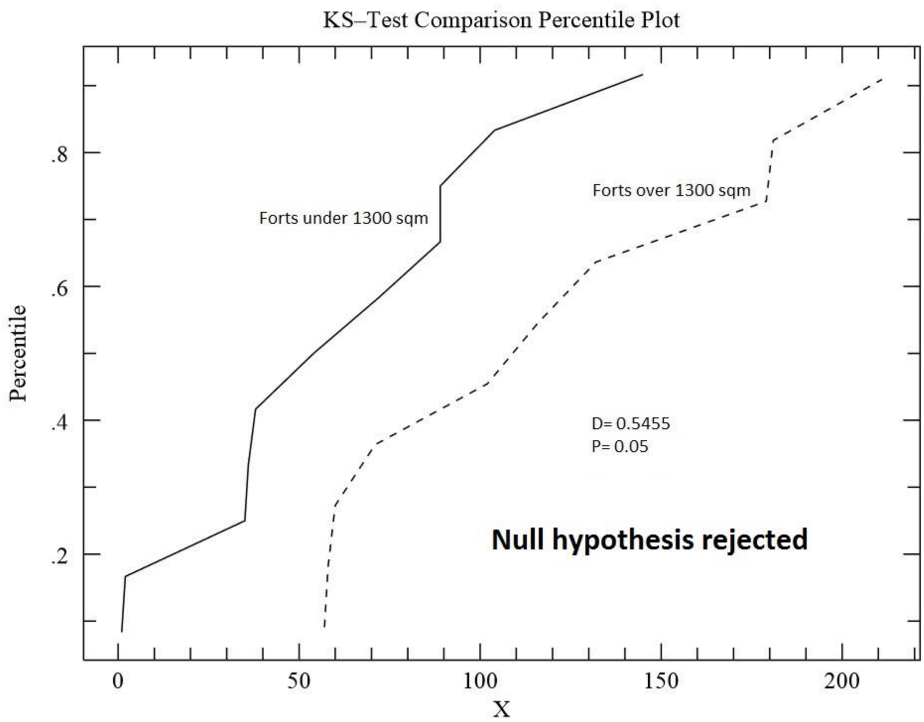

Figure 7.51*: K-S test comparing the inherent visibility of the positions of sites classed as forts of size A, B & C with sites of size D & E. This shows that larger sites are likely to be more visible in the landscape, regardless of RCAHMS site designation.*

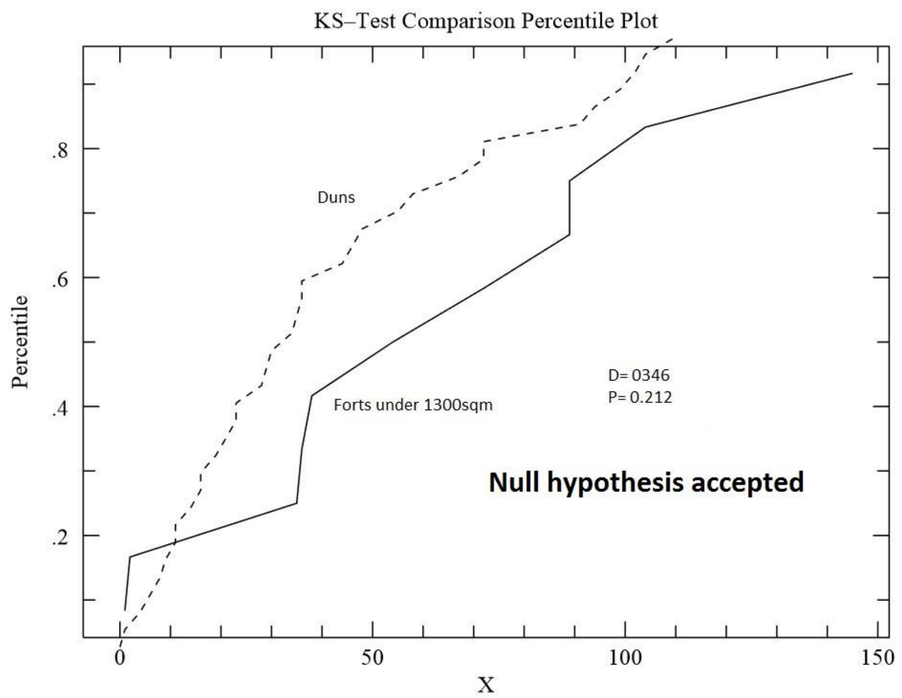

Figure 7.52*: K-S test comparing the inherent visibility of the positions of sites traditionally classed as duns with those classed as forts of size A, B & C.*

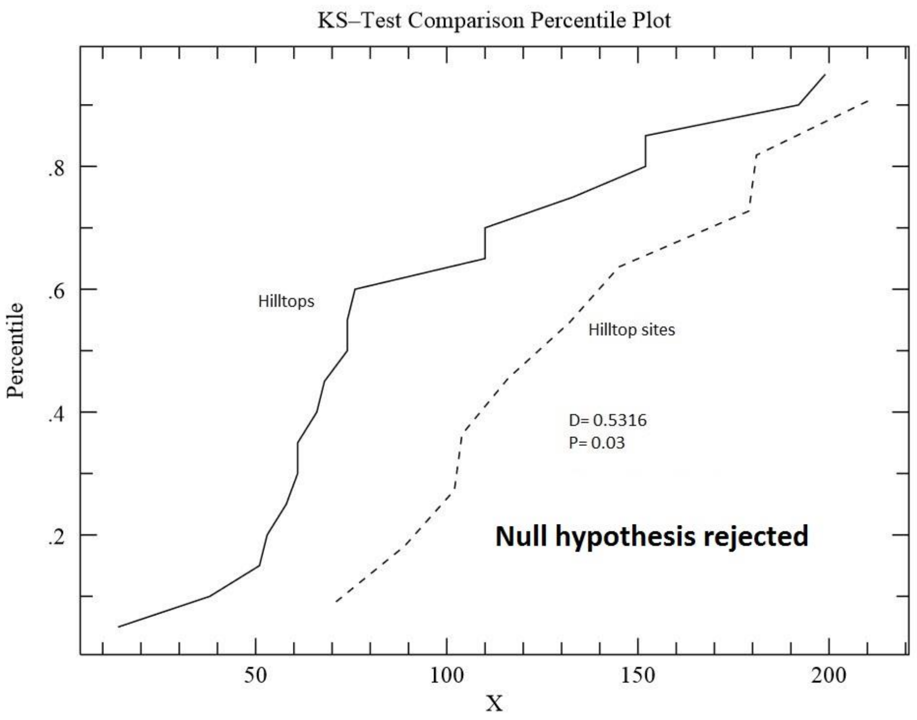

Figure 7.53*: K-S test comparing the inherent visibility of 10 hilltop enclosures with prominent hilltops between 100 m and 250 m above sea level in the case study area. The most visible pixel in the interior of the fort and the most visible pixel on the hilltop were*

used, respectively. This shows that the hills with enclosed sites on them are generally more visible than the other hilltops.

7.2.4 Visibility from sites in southern Kintyre

While the visibility analysis above is useful for determining whether sites are positioned in inherently visible places it does not take into account whether a site might be more or less visible from differing distances. Furthermore, in viewshed analysis visibility to and visibility from a site are not necessarily the same thing in practice (Chapter 2.3). Very little difference, however, was observed between the results of the cumulative viewshed analysis measuring visibility of sites in the landscape and the patterns generated through viewsheds measuring visibility of land from sites over a 10 km radius. Changes in the relative visual characteristics of sites were seen, however, within shorter distances. The more localised visibility of Cnoc Araich is apparent on examination of visibility within its 5 km radius (when compared to the cumulative viewshed analysis) – it has the fifth highest visibility of its surrounding 5 km among the fort class and only one dun is more visible than it (Figure 7.54). It is important to note that its size contributes to its visibility, and should contribute relatively more as distance decreases. A larger site, when using the methodology explained in Chapter 6.2.1, is comprised of more points for its cumulative viewshed, and the area covered by those points becomes exponentially larger compared to the general landscape at shorter radii.

Balloch Hill has notably higher visibility over the shorter distance – it has the second most visibility of its surrounding 5 km among all sites (Figure 7.55). Conversely, the fort at Westport can only see 1% of all land within 5 km, indicating that its already mediocre visibility in the wider landscape is even worse when applied specifically to the surrounding region. Among size A and B, most enclosed sites between 130 m^2 and 300 m^2 and all non-curvilinear examples have poor visibility of their neighbouring 5 km, while curvilinear examples outside the 130 m^2 to 300 m^2 size band generally tend to have greater visibility (Figure 7.56).

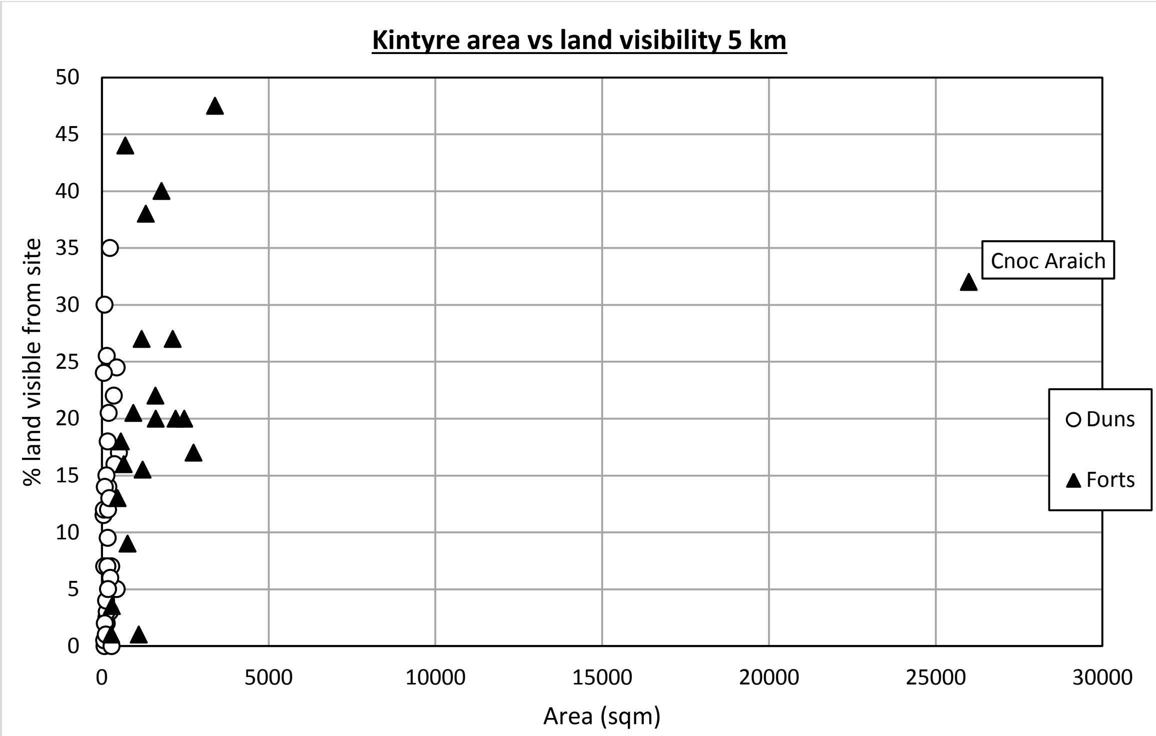

Figure 7.54*: The percentage of land visible from sites over a 5 km radius. This shows the relatively greater vision that Cnoc Araich has of its landscape than other sites.*

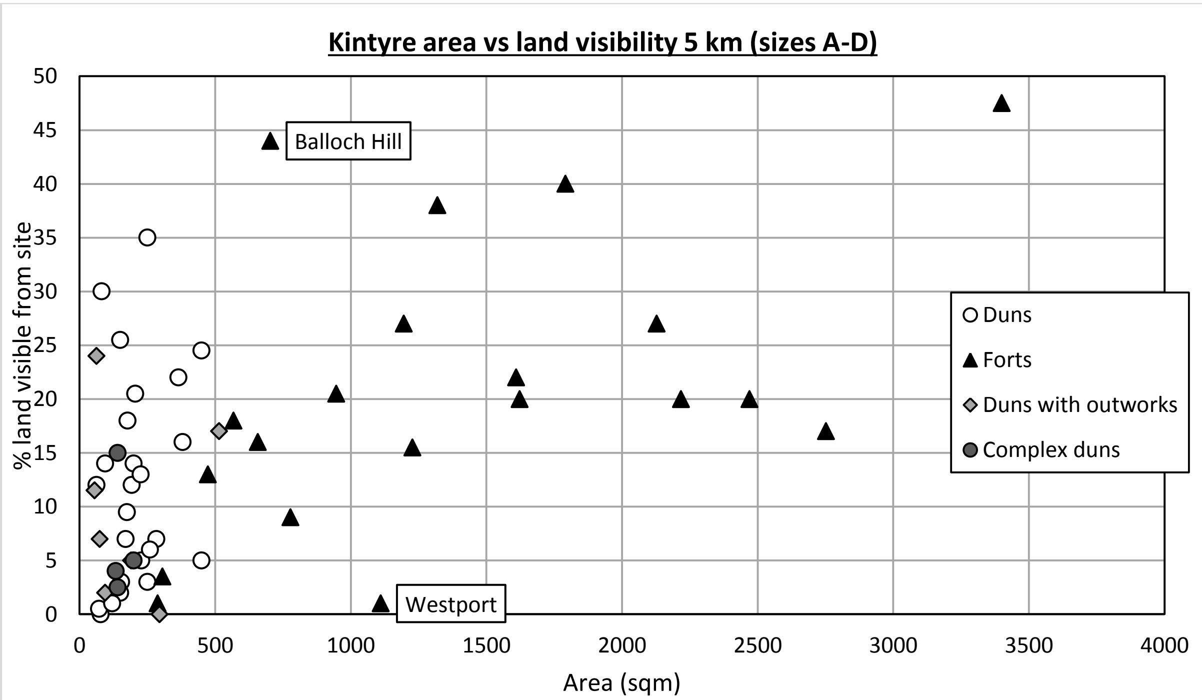

Figure 7.55*: The percentage of land visible from sites over a 5 km radius. This shows the contrast between two sites classed as forts – Balloch Hill and Westport.*

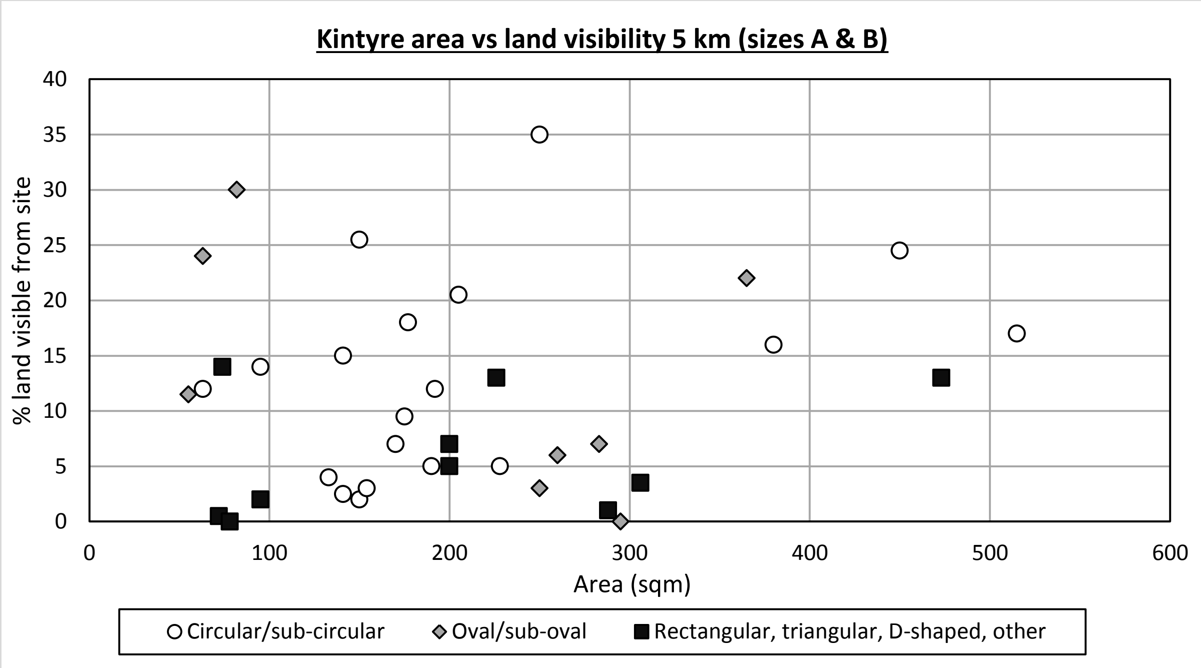

Figure 7.56*: The percentage of land visible from sites over a 5 km radius. Sites between about 130 m^2 and 300 m^2 have lesser visibilities of land over this distance. Non-curvilinear examples have poorer visibility than curvilinear sites.*

When compared statistically, all sites classed as forts are statistically likely to comprise a different dataset to duns in terms of visibility of land distant from them over 5 km (Figure 7.57). Taking into account the topographic prominence statistics in Figures 7.28 and 7.37 or even the visibility analysis in Figure 7.52 above, one might expect there to be some doubt as to whether duns and forts of size A, B and C are distinct from each other, but this is not the case. Forts of size A, B and C can be shown to comprise a statistically significantly different dataset from duns when both are considered homogeneous categories (Figure 7.58). Furthermore, forts over and under 1300 m^2 in area are extremely similar to each other in terms of their visibility characteristics over this distance (Figure 7.59).

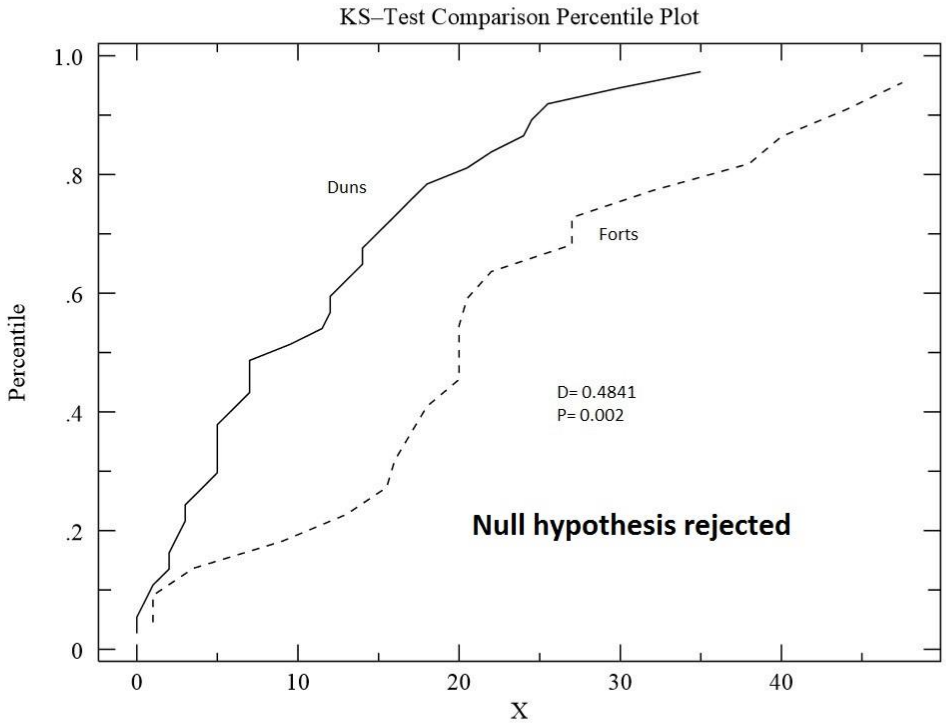

Figure 7.57*: K-S test comparing the visibility of land from all sites classed as forts and duns over a 5 km radius. This shows that forts have greater visibility of their landscapes, if considered as a dataset.*

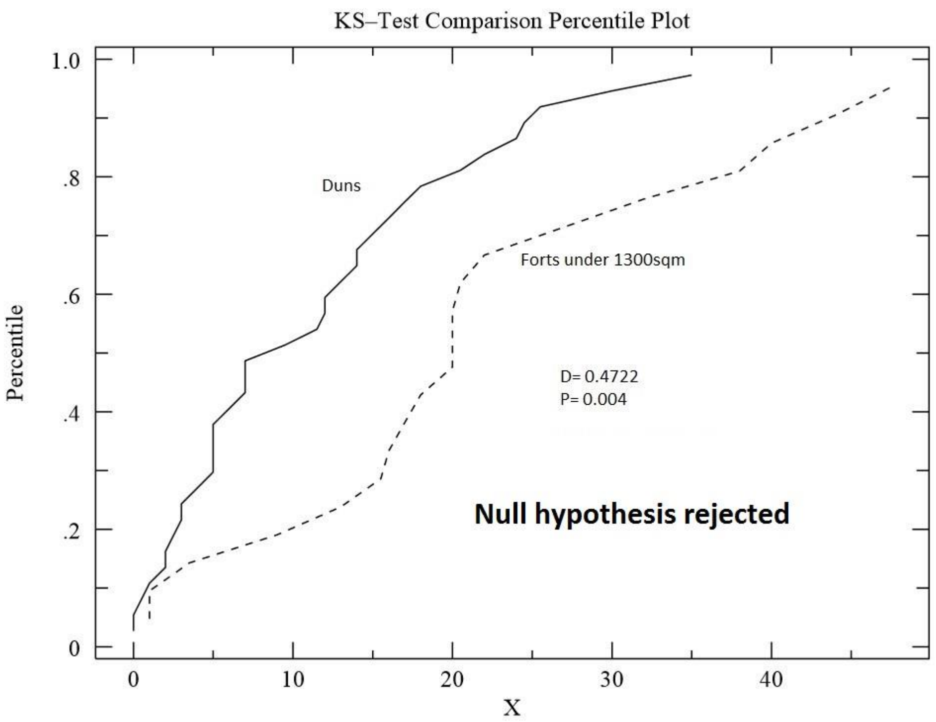

Figure 7.58: *K-S test comparing the visibility of land from all forts in sizes A, B & C with duns over a 5 km radius.*

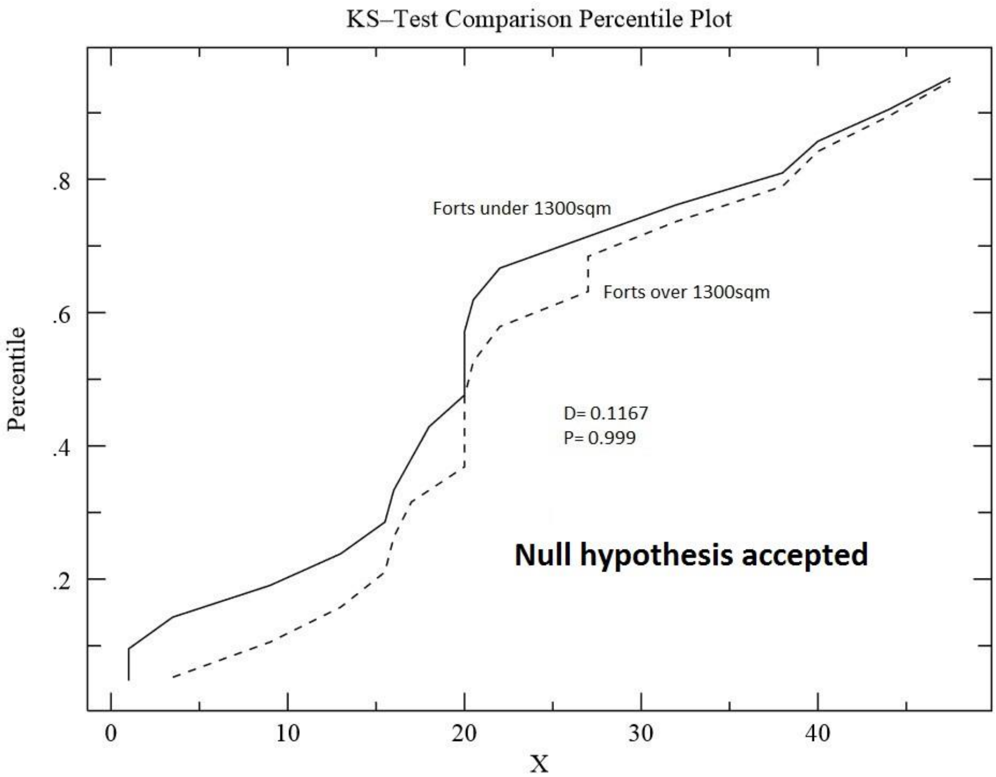

Figure 7.59: *K-S test comparing the visibility of land from all sites classed as forts in sizes A, B & C with sizes D & E, over a 5 km radius.*

The relationship between size and greater visibility is less evident when sites are analysed over their surrounding 1 km instead of over longer distances (Figure 7.60 & 7.61). This is surprising as larger sites themselves take up more space within the 1 km radius, compared to the 5 km distance and the 10 km distance of the cumulative viewshed analysis, and it would be expected that size would be comparatively more of an advantage, both in terms of seeing from the site and being seen at this distance. Yet there appears to be no difference between larger and smaller sites, or at least no determinable, contrasting pattern. Duns, forts, forts over and under 1300 m^2, if taken as single datasets, all belong to the same distribution (Figure 7.62 & 7.63), all could feasibly be grouped as one category with respect to their 1 km visibility statistics. Even if one compares the largest ten forts (size D and E) to sites classed as duns – conceivably the two most different categories in terms of topographic prominence – the datasets do not differ, as groupings, in their local visibility (Figure 7.63). A possible explanation for this is that the terrain immediately surrounding the otherwise extremely visible upland forts is not particularly conducive to local visibility, upland hilly areas hiding large areas of ground in clefts and valleys, and on the far side of crests. If visibility is a major criterion for the placement of the size D sites then it is vision over a greater distance – vision from the larger forts is focused on further away from the site than it is for smaller enclosed sites. The smaller sites' excellent shorter range vision in comparison to longer distances would suggest that they have a more local focus. Morphology may have some importance related to visibility of land among size A and B sites within the 1 km radius, but the difference between circular/oval examples and other types is not statistically significant, albeit the null hypothesis was only relatively marginally accepted (Figure 7.64).

Figure 7.65 shows a comparison between the percentages of land visible from sites within 1 km and 5 km distances. Sites classed as forts are relatively closer to the X axis, representing 5 km visibility, while duns are mostly closer to the Y axis. It therefore appears that forts are more biased towards longer distance visibility than sites classed as duns. This is especially true of the hilltop sites of Knock Scalbart, Ranachan Hill and Ballywilline Hill, while most duns, as well as certain forts including Saddell House, Kildonan Point and Cnoc Araich have a more local focus.

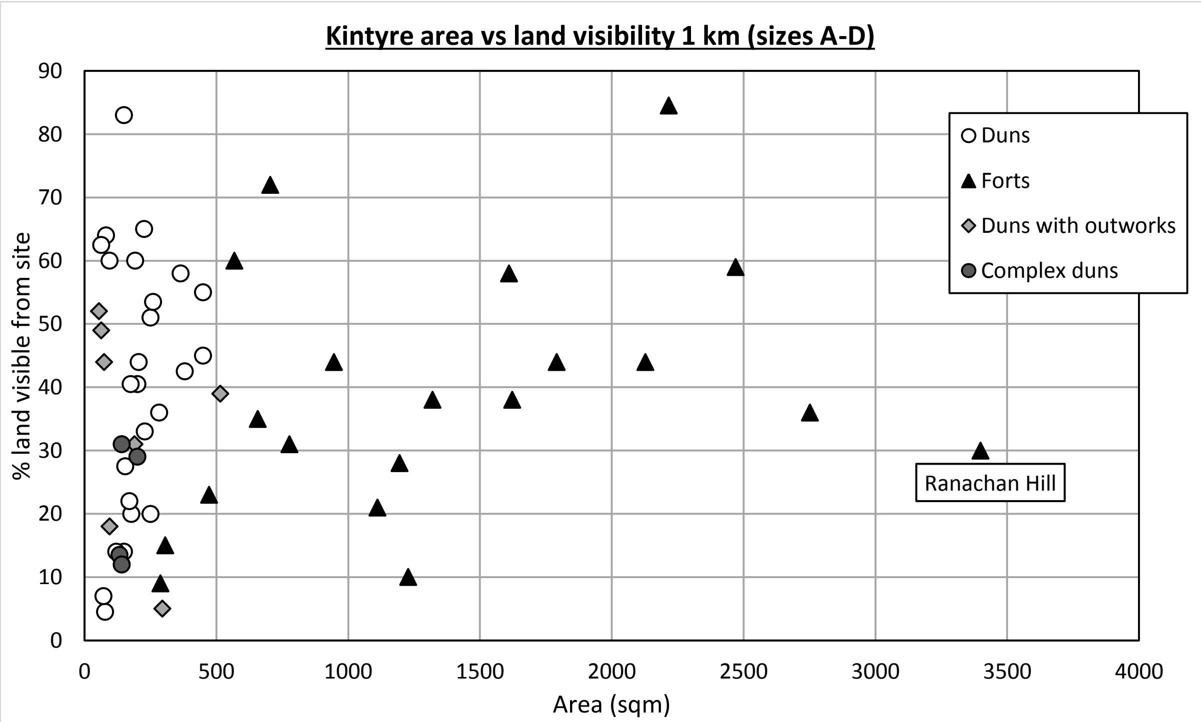

Figure 7.60*: The percentage of land visible from sites over a 1 km distance. This shows that larger and smaller sites/forts and duns have similar visibility of land over this distance.*

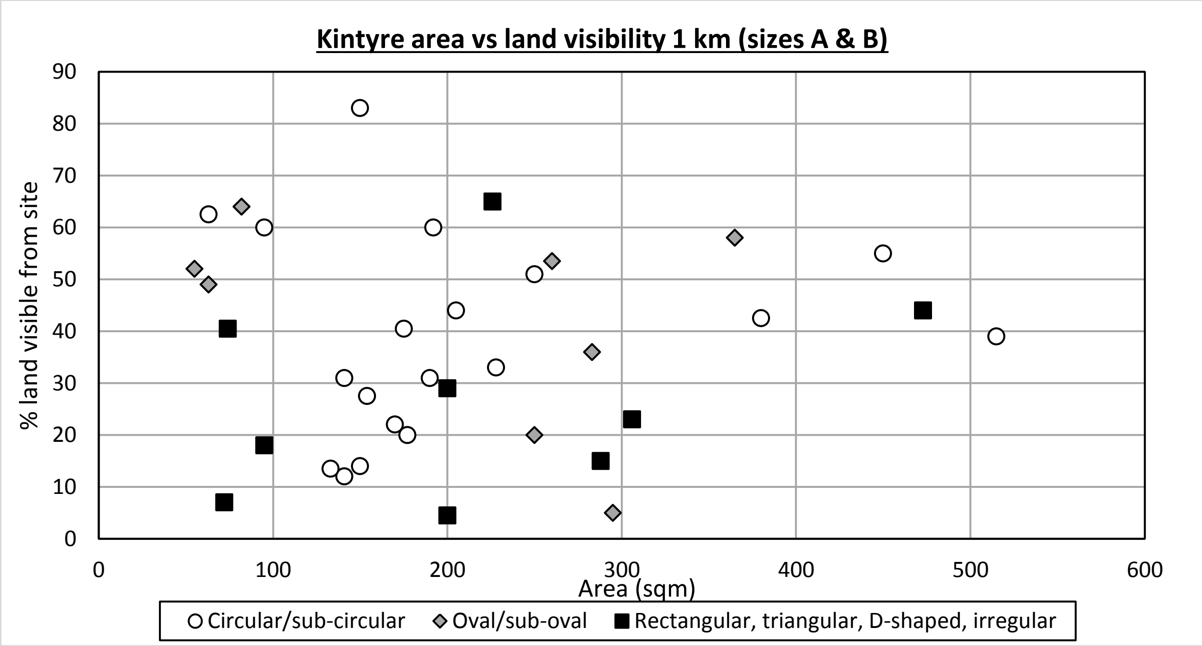

Figure 7.61: *The percentage of land visible from sites over a 1 km distance.*

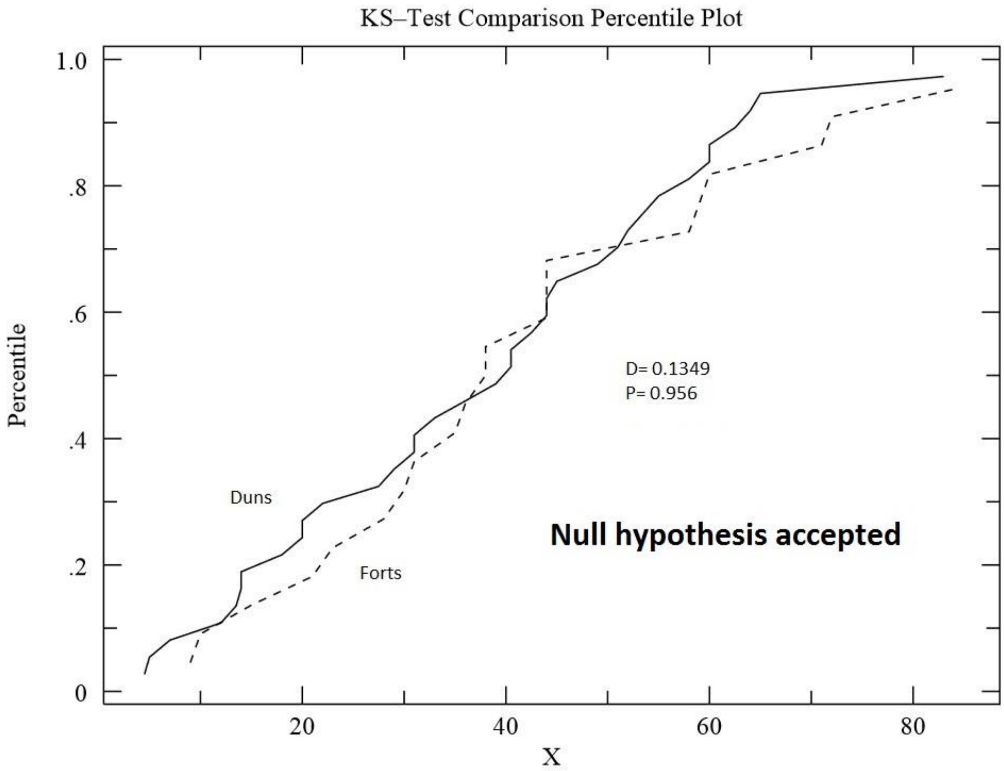

Figure 7.62: *K-S test comparing the visibility of land from sites classed as forts and duns over a 1 km distance. The two datasets do not statistically differ.*

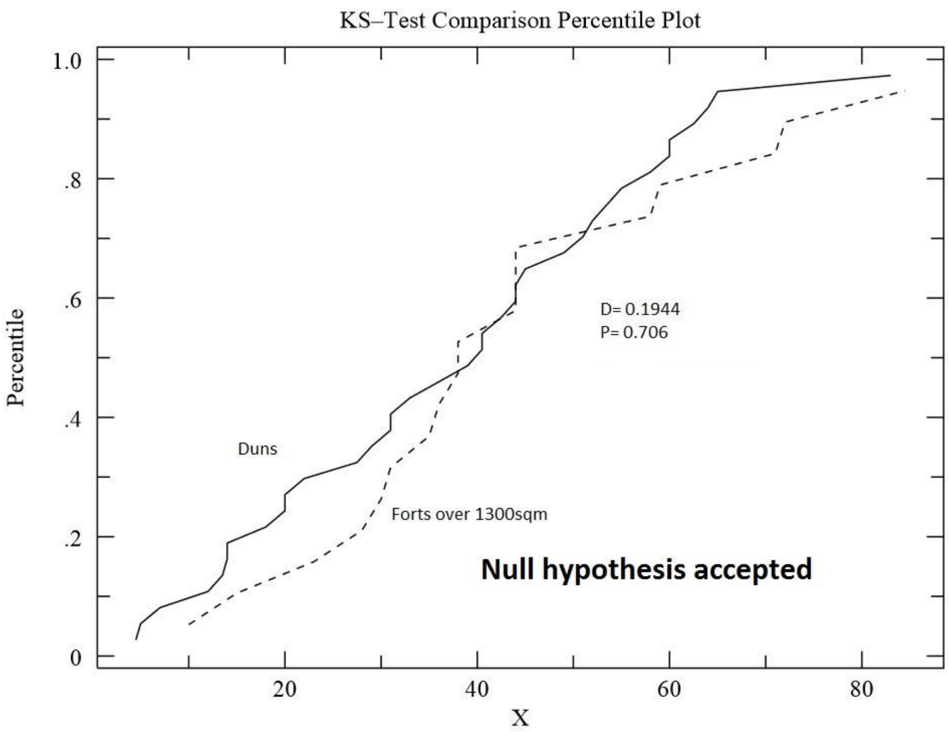

***Figure 7.63**: K-S test comparing the visibility of land from sites in sizes D & E with duns over a 1 km distance.*

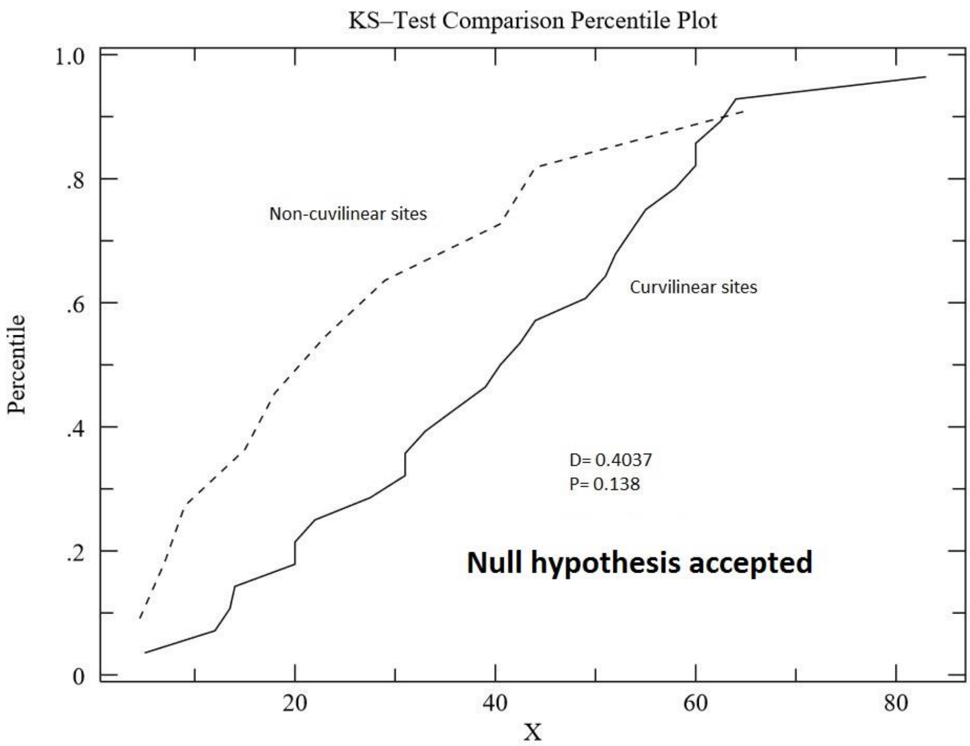

***Figure 7.64**: K-S test comparing the visibility of land from size A & B curvilinear sites with non-curvilinear and irregular sites of that size over a 1 km distance.*

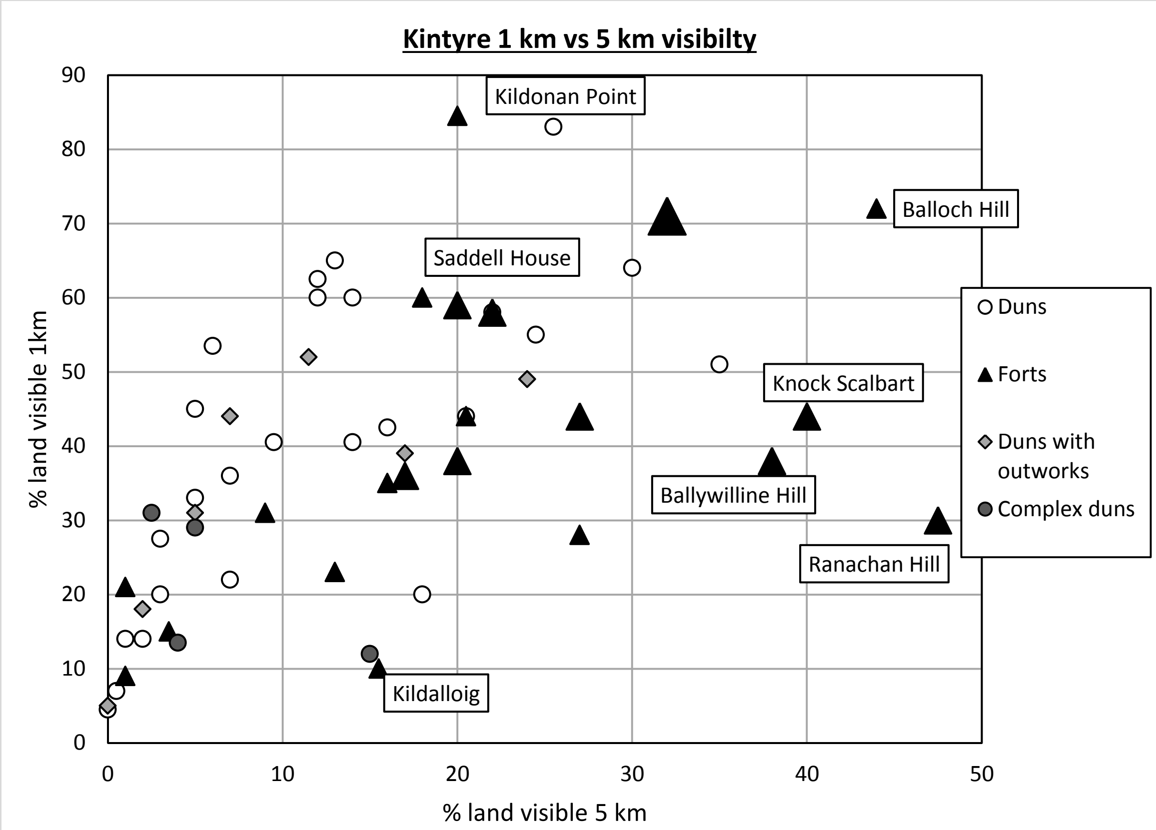

Figure 7.65: *Visibility of land from sites within the 1 km radius (x axis) compared with the 5 km radius (y axis). Forts are grouped into size E, size D and size B & C by descending size of symbol. Those sites closer to the Y axis have vision that is relatively greater over a shorter distance, while those closer to the X axis have a more distant visual focus.*

7.2.5 Proximity to agricultural land

Examination of the distribution of enclosed sites in southern Kintyre overlaid on Land Capability for Agriculture data suggests a clearly positive relationship between sites and land that might be considered arable today (Figure 7.66). Duns and forts survive on higher quality agricultural land along the west coast and in the south at Southend. On the east coast, what few sites there are seem to correspond to patches of land rated 4.2 or above, while in the Laggan area sites appear to cluster around the margins of the fertile basin rather than within it. Cropmarked settlement evidence exists in the low-lying area suggesting that enclosed lowland sites have been eliminated as upstanding monuments through agricultural improvement, rather than there having been any particular desire to place all later prehistoric settlement sites on the higher ground surrounding the valley (see Section 8.1.2).

On average, the surrounding 5 km of total enclosed sites contains 37.7% agricultural land, as defined in Chapter 6.2.3 – that is, land rated 5.2 or better in Land Capability for Agriculture ratings. This is in comparison to 26.3% agricultural land in the case study area as a whole. Sites classed as duns and forts have 36.6% and 39.5% high quality land within their surrounding 5 km respectively size D and E sites have even more at 48.4% (Table 7.2). Graphing the relationship between size and proximity to HQ land shows most sites of size C and D clustered between 40% and 60%, with around half of size A and B (mostly classed as duns) below 30% (Figure 7.68). This probably represents a correlation between larger enclosed sites and areas of favourable agricultural land, while the smallest sites are more likely to be located along the west coast, with its thin strip of agricultural land, or in less favourable areas (for example Rubh a'Mharaiche south west of Machrihanish, or Borgadel Water and Sron Uamha, both on moorland at the Mull. Over 50% of land within 5 km of Cnoc Araich can be classed as agricultural, well above the average for all sites (Figure 7.67). Sites of size A & B with elements of complex Atlantic architecture do appear to have less favourable land in their surrounding region, although the sample size of four sites is too small to be able to extract much meaning from this. Any statistical testing of patterns between site category or size and agricultural land proximity shows little difference between any of the various objectively or subjectively definable groups of sites, which reflects the hypothesis observable in the distribution map that there is a generally positive correlation between the distribution of all kinds of enclosed sites and better quality land, and that proximity to agricultural land was an important factor in the location of all sizes of enclosed site.

Type	% of 5 km land surroundings that is agricultural land (average)	Area of agricultural land within 5 km (m^2) (average)	% of akm land surroundings that is agricultural land (average)	Area of agricultural land within 1 km (m^2) (average)
Total case study area	26.3		26.3	
All sites	37.7	20757945	56.6	1369649
All duns	36.6	20158562	58.8	1409815
All forts	39.5	21785458	52.8	1300793
Size A	37.3	20153887	64.9	1519212
Size B	28.6	15993569	41.3	746856
Size C	38.1	19634963	71.5	1539409
Sizes D & E	48.4	28588505	53.6	1453013

Table 7.2: *The average area of agricultural land within 5 km and 1 km and the percentage of land within that radius that is comprised of agricultural land.*

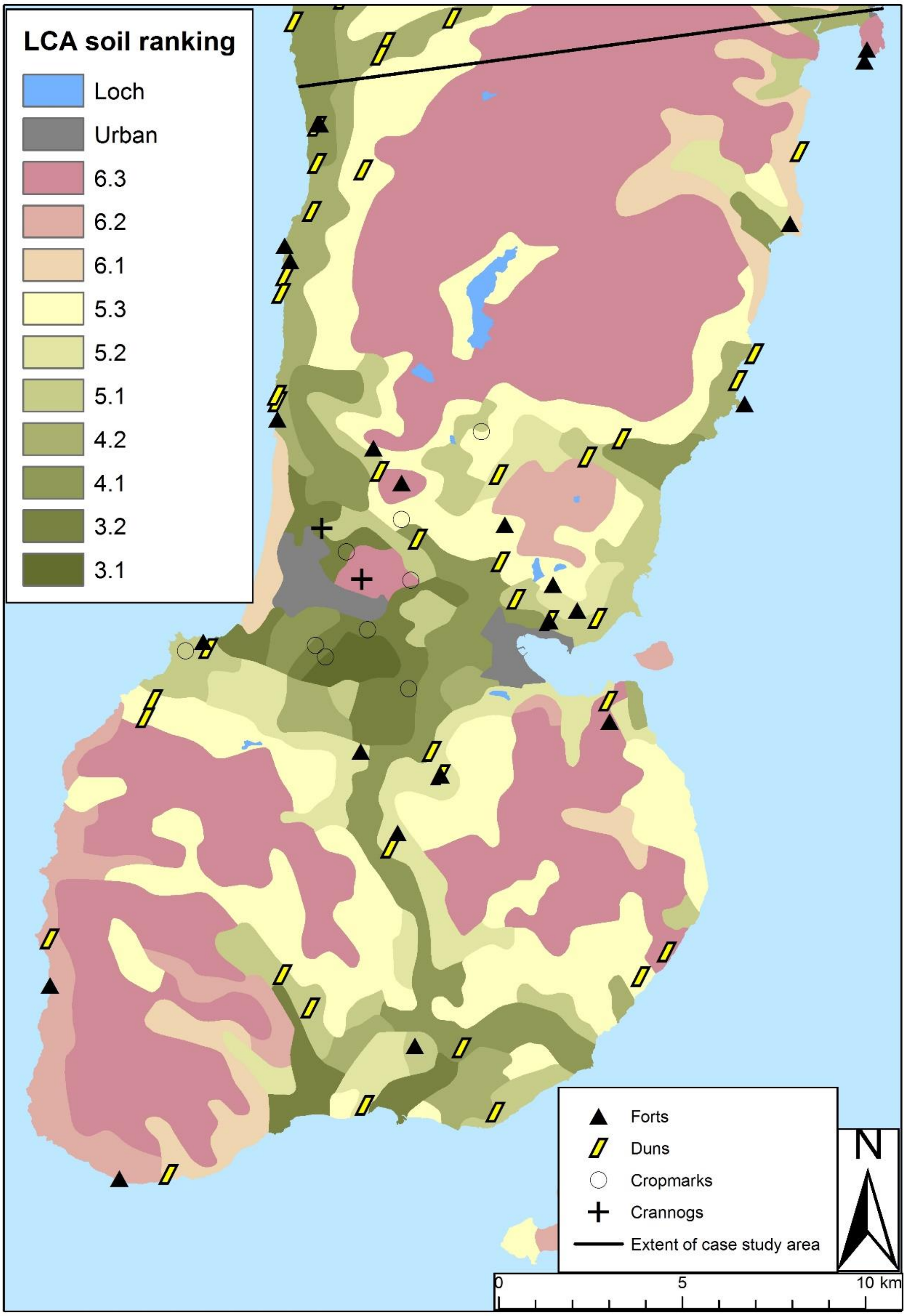

Figure 7.66: *Enclosed sites in Southern Kintyre overlaid on National Soil Survey Land Capability for Agriculture mapping.*

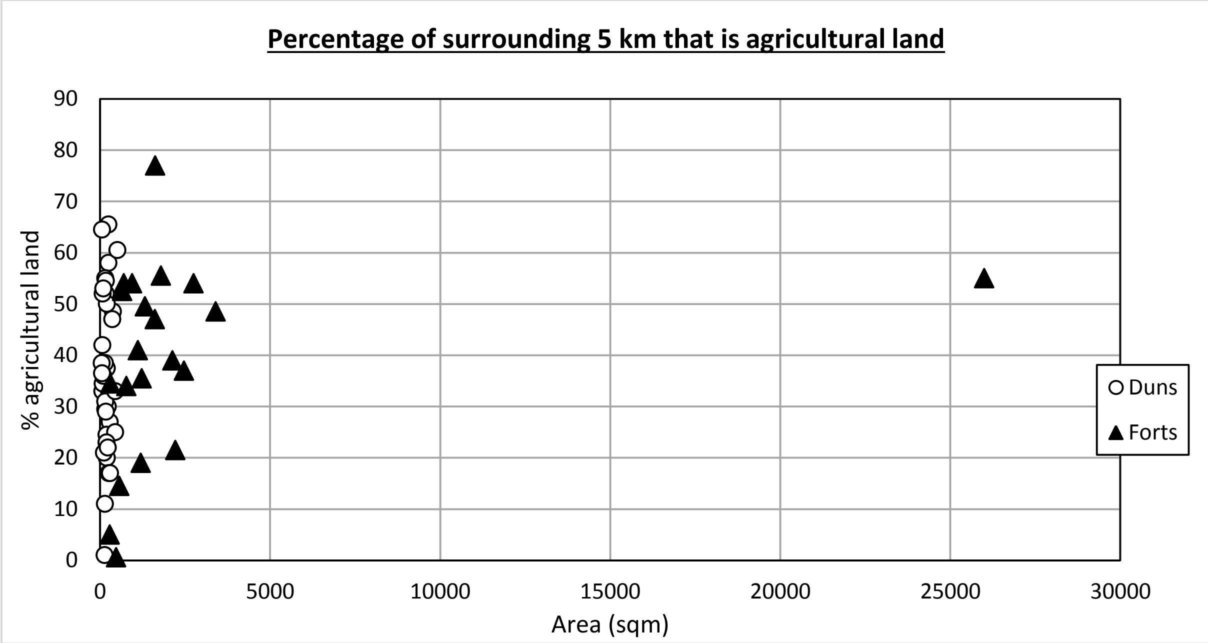

Figure 7.67: *The percentage of the 5 km radius of each enclosed site that is agricultural land, as previously defined. Showing that Cnoc Araich is in a relatively fertile part of Kintyre.*

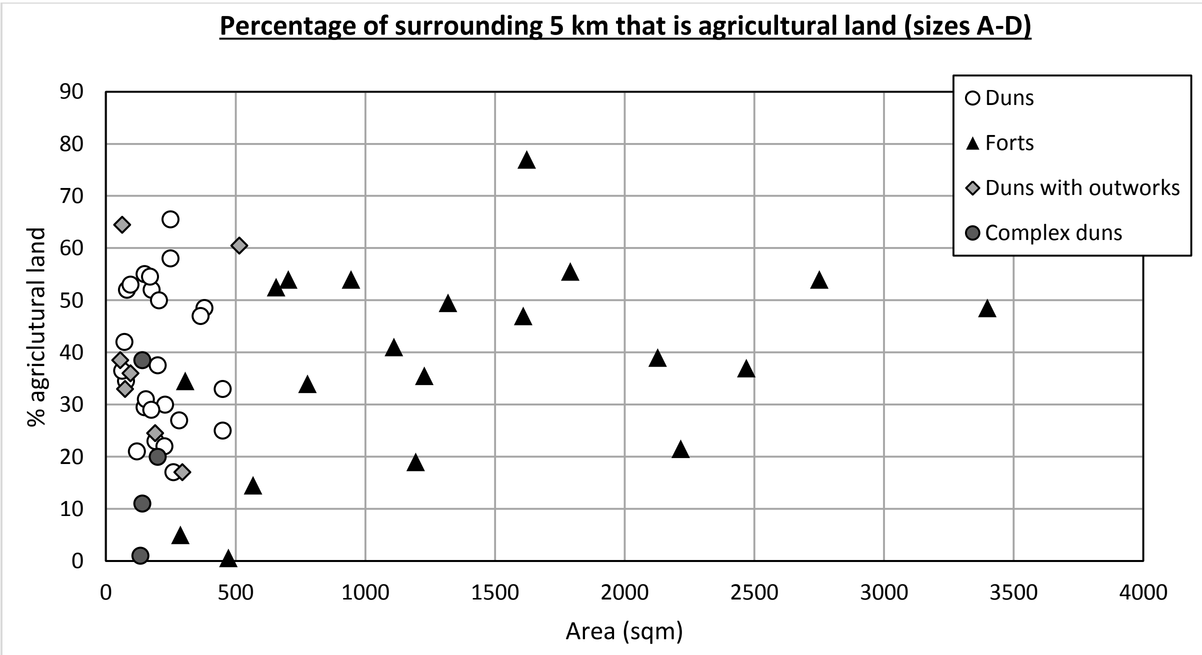

Figure 7.68: *The percentage of the 5 km radius of each enclosed site that is agricultural land. Most of the larger sites are close to 50%, while many smaller sites, mainly classed as duns, are around 20-40%.*

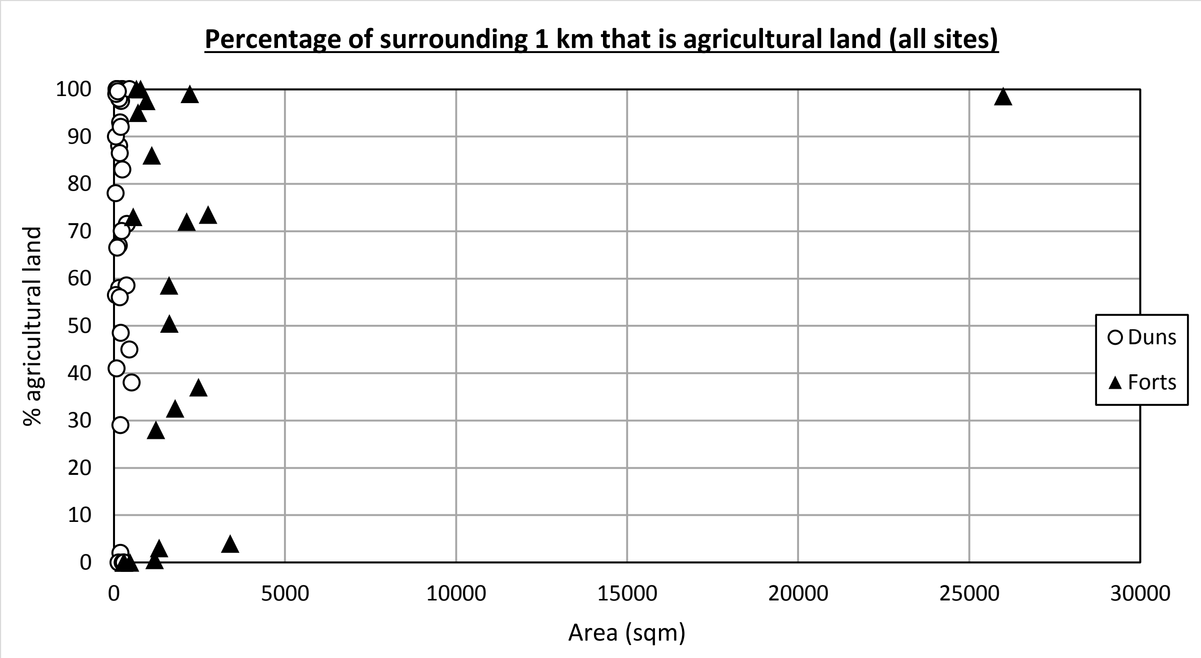

__Figure 7.69:__ The percentage of the 1 km radius of each enclosed site that is agricultural land. Cnoc Araich is one of few relatively large sites classed as forts that are located among fertile land.

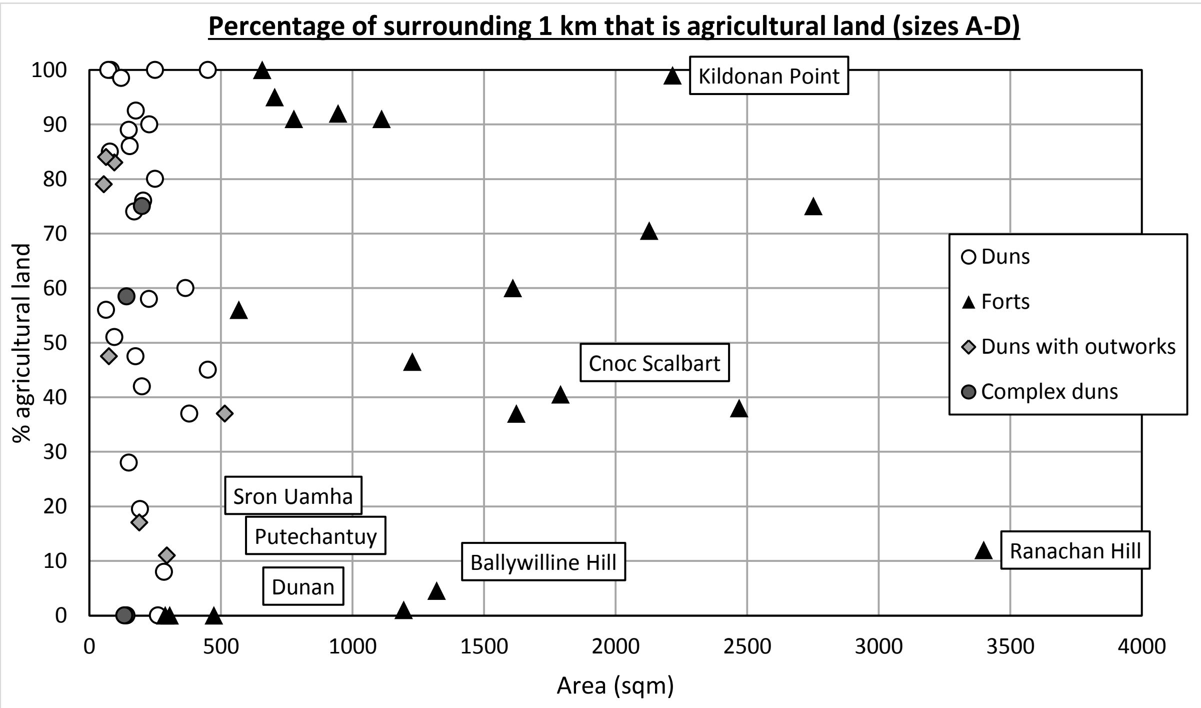

__Figure 7.70:__ The percentage of the 1 km radius of each enclosed site that is agricultural land. Showing that most size D sites are not completely surrounded by agricultural land, while a group of size C sites is.

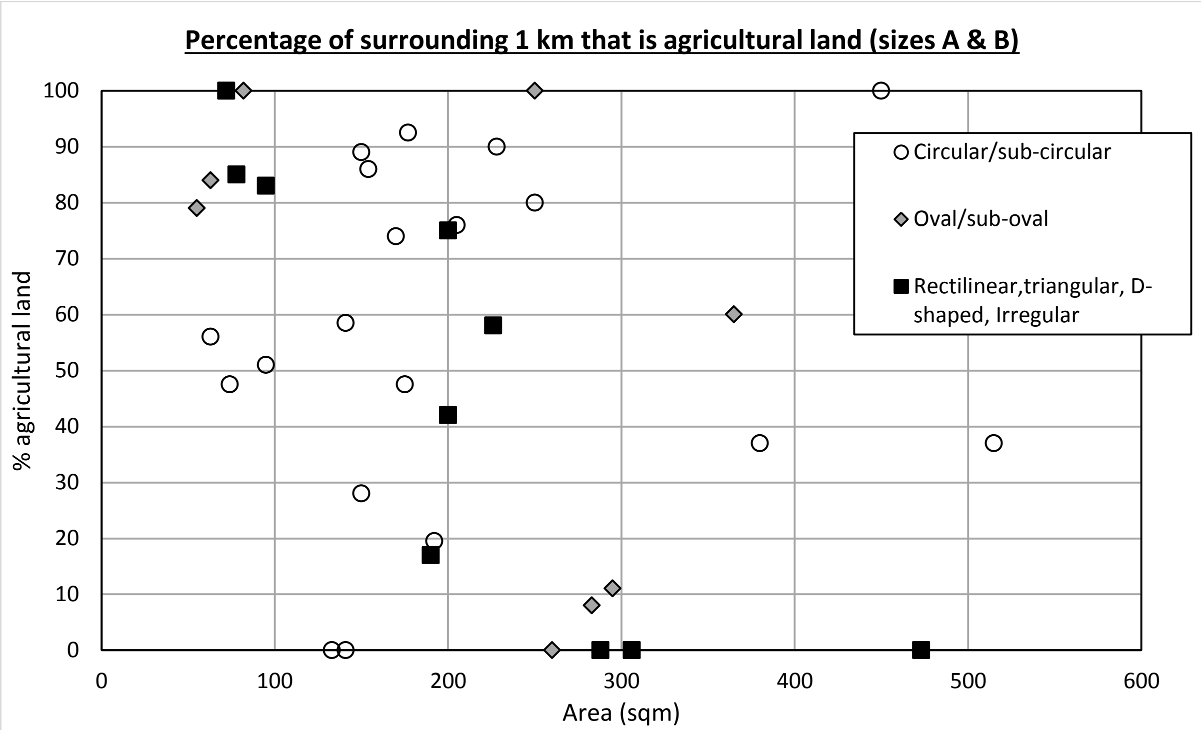

Figure 7.71: *The percentage of the 1 km radius of each enclosed site that is agricultural land.*

Examination of the 1 km distance representing the immediate locale of sites may give us some idea of the agricultural potential of the land encountered by inhabitants of those sites on a daily basis. Given that 1 km is a considerably shorter radius than 5 km it is not surprising that the results are more polarised than the 5 km radius – sites are more likely to be either among arable land or nearly a kilometre from it (Figure 7.70). Few of the size D and E sites tend to fall into the former category, with the exception of Cnoc Araich, which is almost completely surrounded by agricultural land (Figure 7.69), and Kildonan Point which is on a coastal rocky crag with a low-lying area of marginally arable land (ranked 4.2 by the LCA) immediately inland from it comprising 99% of the surrounding 1 km. Ranachan Hill, on the other hand, is more distant from agricultural land, and this is a trait that is shared somewhat by other prominent upland sites such as Ballywilline Hill and Knock Scalbart (Figure 7.70). There are three sites classed as forts with no agricultural land nearby, and these are by far the smallest (size B), least prominent and least visible examples from land: Putechantuy, Dunan and Sron Uamha. There are also a group of five size C sites between 657 m^2 and 1111 m^2 with above 90% of their surrounding land within a kilometre made up of agricultural land. These are mostly coastal forts, and this grouping becomes less exceptional if the actual area of farming land is measured – there is less land nearby, but nearly all of it is agricultural. Duns have a slightly larger area of agricultural land nearby (56393 m^2) compared to forts (52032 m^2) in Table 7.2, although the two sites scoring highest are Cnoc Araich (124409 m^2) and Balloch Hill (119383 m^2), both classed as forts – albeit of completely different sizes. Size D and E sites have much more agricultural land within 5 km than sizes A, B and C, but less than sizes A, B and C within 1 km. This supports the hypothesis that sites of size D are located in fertile regions, but are themselves comparatively distant from the agricultural land itself. Size B sites have by far the smallest area of agricultural land within 5 km, but particularly within 1 km (Table 7.2).

Examining size A and B sites shows little pattern in terms of shape – circular, oval and non-curvilinear sites show a similar variety of percentages of agricultural land nearby (Figure 7.71). Size A and B sites with complex Atlantic architecture do not form a cohesive group as they appeared to do over the 5 km distance with some such as Kildonan Bay and Kildalloig having high percentages of agricultural land locally (Figure 7.70). If site area is taken into account, however, most examples in size A have over 50% of their surrounding 1 km made up of agricultural land (Figure 7.71). Size A sites are also the grouping that has the largest average area of agricultural land within 1 km in Table 7.2. Sites slightly larger than this, including the three size B sites classed as forts, are more likely to fall below 40% (Figure 7.71). If a K-S test is used, all size B sites are likely to have a lesser percentage of agricultural land within 1 km than size A sites at a statistically significant level (Figure 7.72 & 7.73). A difference between size A and B is potentially significant as the 250 m^2 area is close to the 180 m^2 internal area cited by Harding (1984, 218-9) as the maximum size of a roofed dun or dun-house. Size A sites are not significantly different from sizes C to E (Figure 7.74 & 7.75). This would suggest that small sites of potentially roofable area (size A) and relatively larger enclosed sites of roughly Balloch Hill size and above (sizes C to E) both have generally positive relationships with agricultural land in Kintyre, while the intermediate examples in terms of area (size B) do not share this distribution and tend to be further away from better land.

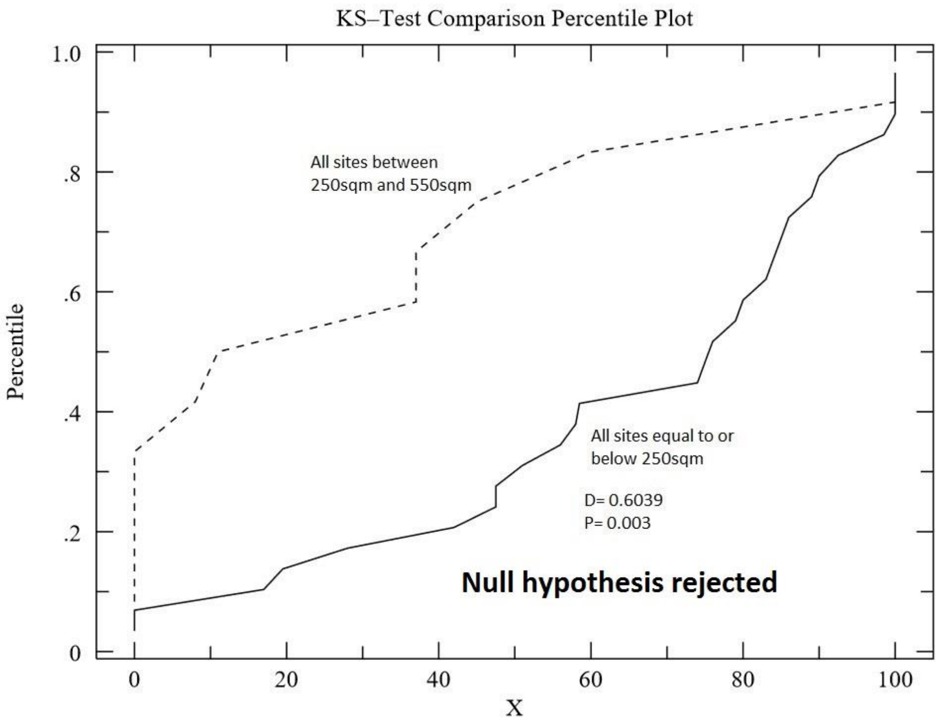

Figure 7.72*: K-S test comparing the percentage of 1 km radius that is agricultural land between size A and size B sites. This indicates that the surroundings of size A sites are more likely to be made up of fertile land than size B sites.*

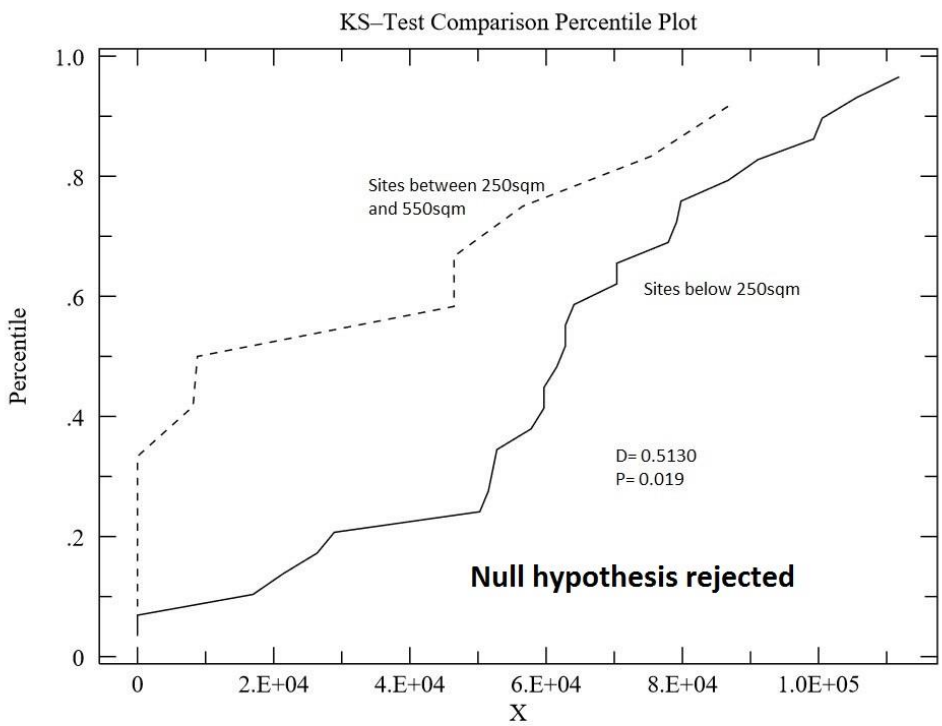

Figure 7.73*: K-S test comparing the area of agricultural land in the 1 km radius between size A and size B sites.*

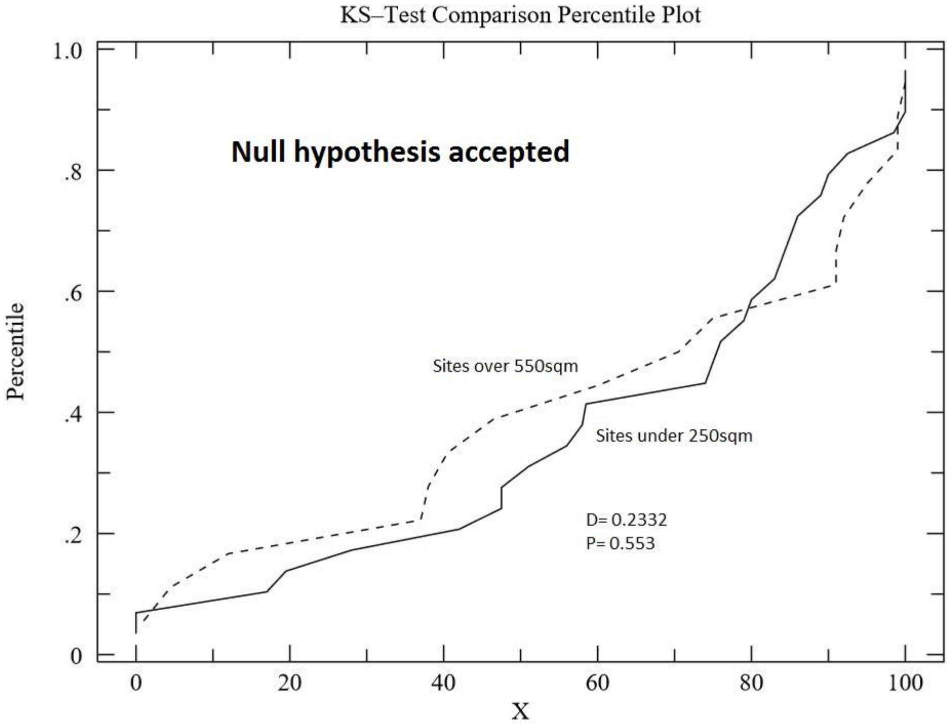

Figure 7.74*: K-S test comparing the percentage of 1 km radius that is agricultural land between size A sites and size C–E sites. This shows that the datasets may be taken from the same distribution.*

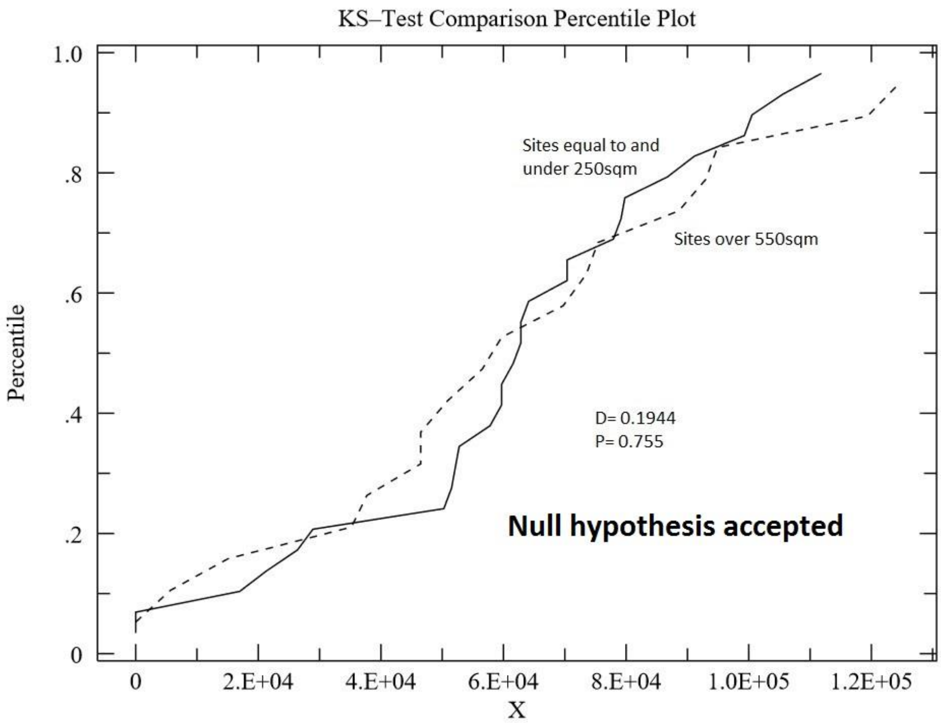

Figure 7.75*: K-S test comparing the area of agricultural land in the 1 km radius between size A sites and size C-E sites. Again, the datasets are comparable.*

7.2.6 Agricultural land visibility

Agricultural land is more visible from sites than non-agricultural land. The former comprises 51.5% of sites' 5 km land viewsheds, compared to just 37.7% of actual land surrounding sites within that distance (Table 7.2 & 7.3). While superficially this suggests deliberate placement of sites to view better land the reality is more complicated - it is important to consider that the majority of higher quality farming land is low lying relative to less productive areas. While the most visible places in the landscape are higher ground these tend to be peaks which block the visibility from a given point to other high ground behind them, so the actual area of land visible is quite small. Conversely, lower lying land is generally flatter – even with a limited outlook, one can often see a large area. Thus there may be a slight natural bias in the data, large tracts of agricultural land may be naturally more visible in the landscape.

Type	**% of 5 km land visibility that is agricultural land (average)**	**Area of visible agricultural land within 5 km (m^2) (average)**	**% of 1 km land visibility that is agricultural land (average)**	**Area of agricultural land visible within 1 km (m^2) (average)**
All sites	51.5	5046903	60	624698
Duns	51	3813732	64.2	620923
Forts	52.2	7160912	52.8	631169
Size A	53.4	3679543	71.4	644235
Size B	38.7	3209799	28.5	392242
Size C	58.8	6363728	72.5	700549
Sizes D & E	54.2	9842867	53.6	765015

Table 7.3: *The percentage of sites' landward viewsheds that is agricultural land and the area of agricultural land visible within 5 km and 1 km radii.*

In order to explore whether sites may be deliberately positioned to view arable land, we can look at the percentage of each site's complete 5 km landward viewshed that comprises high quality land (e.g. Figure 7.76-7.78). Few obvious patterns in this data are apparent, however. Size D sites tend to lie towards the middle of Figure 7.76, i.e. a moderate percentage of their 5 km viewshed is agricultural land, and are not significantly likely to differ statistically as a dataset from all smaller sites, albeit the smaller sites being more extreme in that they are more likely to have either a very high or very low percentage of agricultural land in their landward viewsheds (Figure 7.79). Yet if the actual area of agricultural land visible from these larger sites is examined it is very high compared to the smaller sites. When the hectarage of visible agricultural land from all sites is calculated, size D and E sites can see over 984 ha of agricultural land on average, compared to a 505 ha average for all sites combined (Table 7.3 & Figure 7.77; Also see Figures 7.82 & 7.83). This reflects the greater general visibility of the size D and E sites, and suggests that the moderate percentage of agricultural land in their viewsheds is due to an ability to see more low quality land and upland landscapes than less prominent sites, while still maintaining excellent regional visibility of agricultural land (e.g. Figure 7.55 versus Figures 7.76 & 7.77). Size A and B sites vary much more than size D and E, having as little as 0% and as much as 100% of their viewsheds made up of agricultural land. This may again partially be due to the greater total visibility of the larger sites – their viewsheds are more representative of the landscape, while the smaller sites, with less total land visibility, will have smaller viewsheds that are characteristic of more restricted areas.

Sites classed by RCAHMS as duns have a similar percentage of HQ land in their viewsheds on average compared to forts – 51% versus 52.2% (Table 7.3). However, duns can see a reduced area of arable land compared to forts, as seen in Figure 7.77, reflecting the poorer general visibility of the former. This is especially true of the non-curvilinear and irregular enclosed sites in sizes A and B – the hectarage of agricultural land visible from these sites is universally extremely low within a 5 km radius (Figure 7.78). This is likely to be due to a combination of poor visibility of the landscape over that distance (Figure 7.56) and their coastal positioning meaning there is less land within that distance of each site (e.g. Figure 7.84).

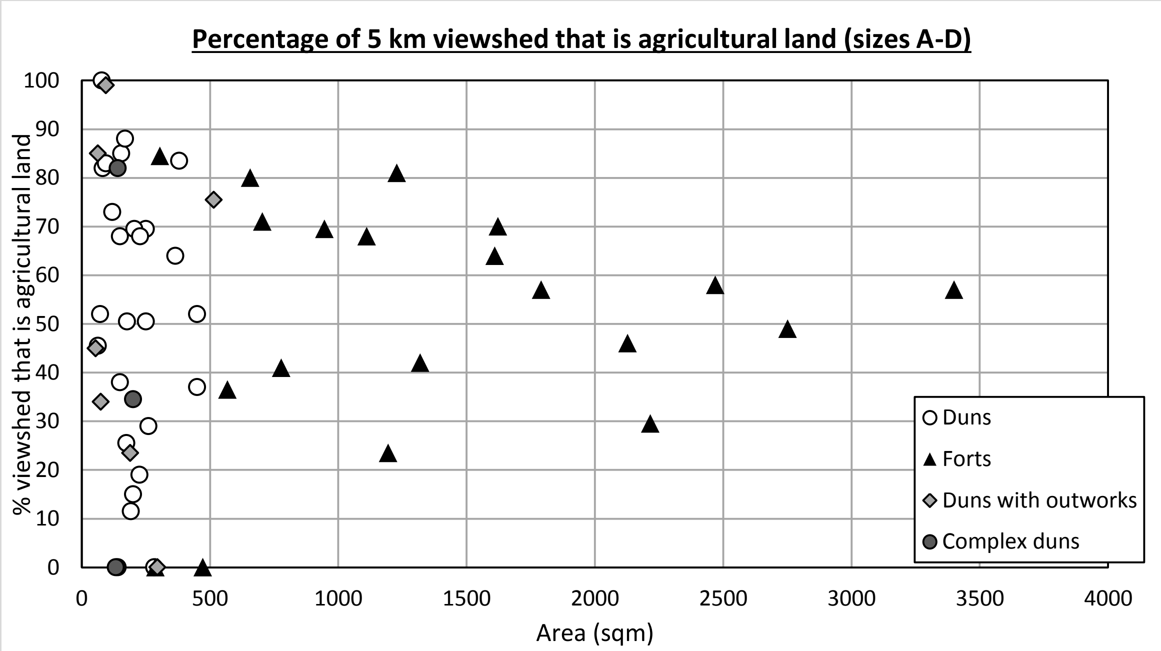

Figure 7.76: *The percentage of each site's 5 km land viewshed that is agricultural land. This shows that sizes C and D have a more average/moderate percentage, while sizes A and B are more diverse.*

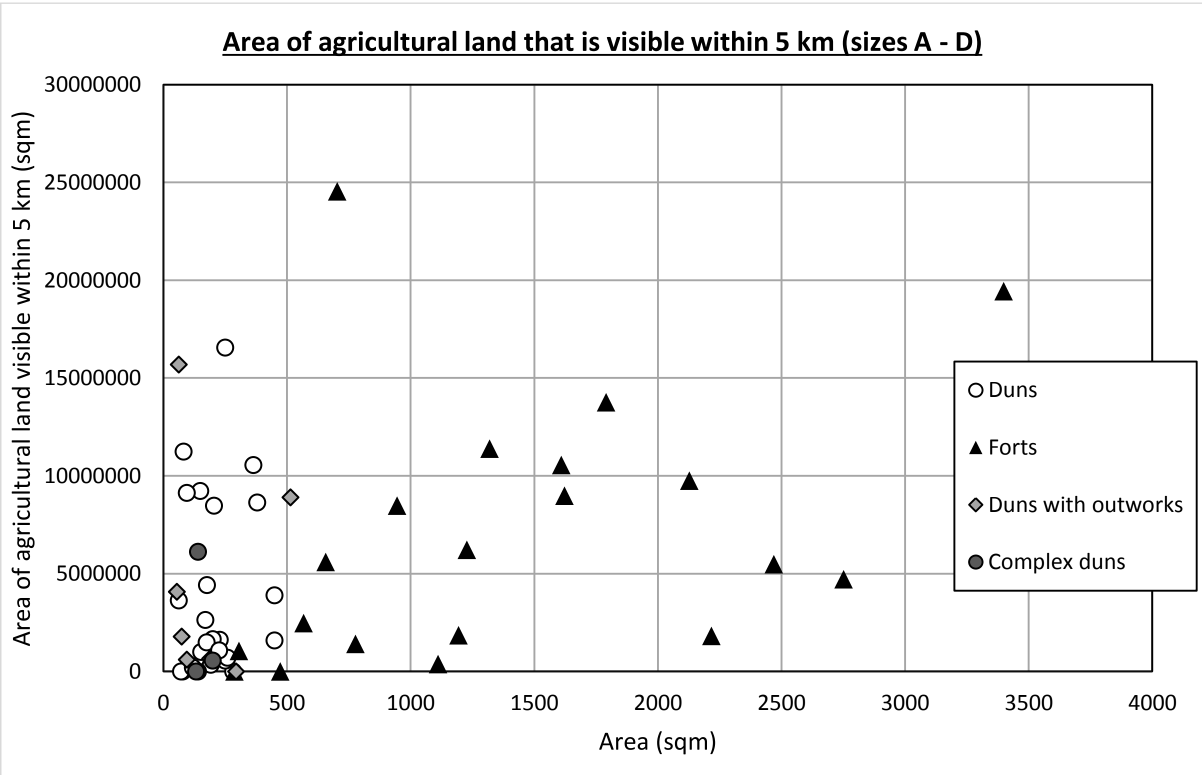

Figure 7.77: *The area of agricultural land visible from each site within 5 km. This shows that size D sites can see comparatively larger areas of agricultural land than size A and B, despite their moderate placement in Figure 7.76.*

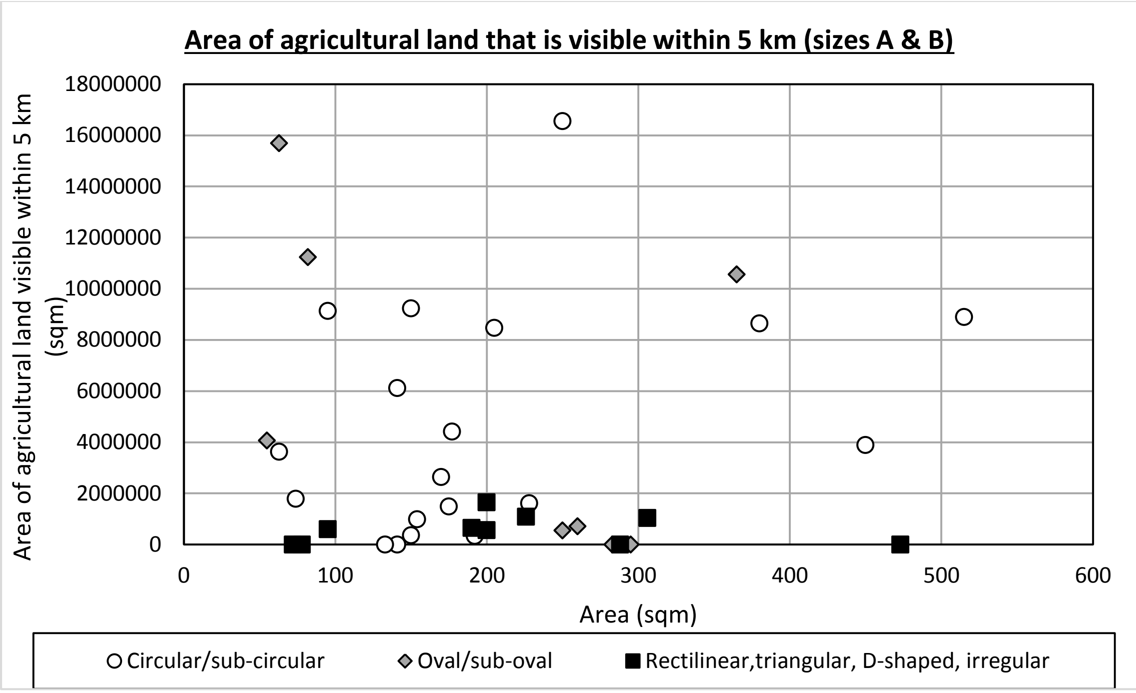

Figure 7.78: *The area of agricultural land visible from each site within 5 km. Non-curvilinear sites can see comparatively less than most curvilinear examples.*

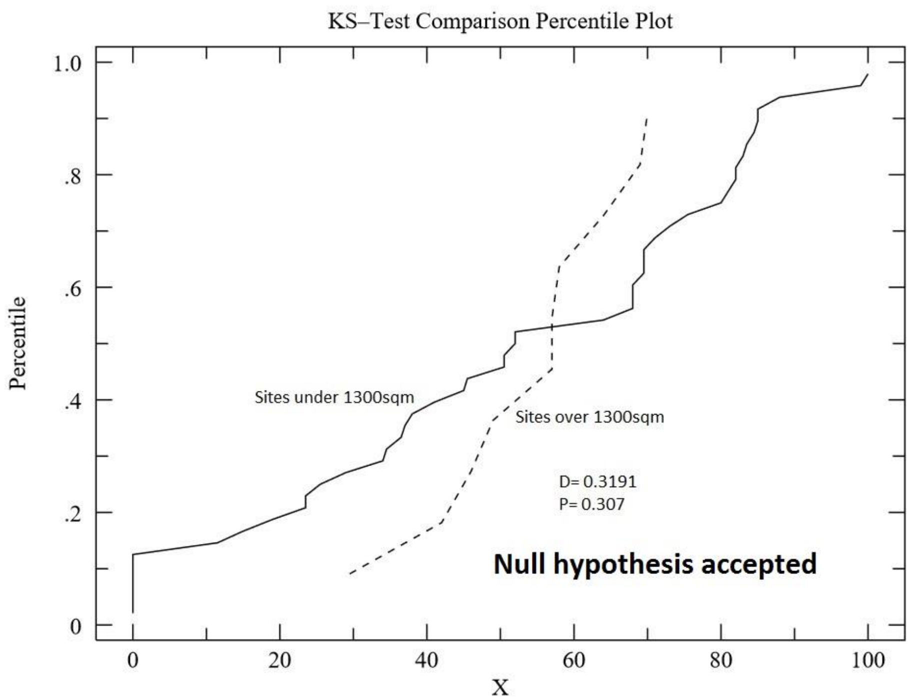

Figure 7.79: *K-S test comparing the percentage of agricultural land in the landward viewsheds of size D & E sites with size A, B & C sites, within a 5 km radius. This shows that neither grouping has consistently higher percentages, but the A, B & C grouping is more extreme – it has more sites within it closer to 100% and 0%.*

Figure 7.88 shows the percentage of sites' 1 km viewsheds that is agricultural land. Sites classed as duns have a significantly higher percentage than forts – 64.2% compared to 52.8% (Table 7.3). When size A sites alone are compared to all sites together or all forts, this difference is magnified, agricultural land taking up 69.3% of their viewsheds on average. There is a considerably greater difference between size A sites and size D and E in this regard than there is regarding the proximity of agricultural land (See Table 7.2), suggesting that the visibility of sites below 250 m^2 may be more focused on that land. This difference is, however, marginally not of a high enough confidence level to be statistically significant (Figure 7.89). It is though apparent in the scatter plot examining the smallest sites that most size A sites have over 60% agricultural land within a kilometre, while six out of the nine size B sites actually have 0% nearby, or no visibility whatsoever, of agricultural land (Figure 7.90). This pattern exists largely independently of site shape, architecture or outworks, and purely relates to size. It is not apparent when the area of agricultural land visible is taken into account (Figure 7.91 & Table 7.3), with size A sites able to see a comparatively similar area of agricultural land compared to sizes B to E when considered together (and less than size D and E), but it does suggest that the visibility of the smallest sites is more directed towards that land.

Many size C sites have very high percentages of agricultural land in their 1 km viewsheds, but only average total areas of land visible (Figure 7.88 & 7.91; Table 7.3). This is similar to a pattern seen over the 5 km distance and may suggest that these sites are advantageously positioned to view better farming land. Size D sites tend to have both a moderate percentage and moderate amount of agricultural land in their viewsheds with a few exceptions. Kildonan Point has a very high percentage (99%), but only a moderate to high area of agricultural land visible, reflecting its coastal positioning – most of what it can see inland is agricultural land but it cannot see very much of it (Figure 7.80). Carradale Point is also coastal, but it can see almost no agricultural land at all within 1 km – its focus may have been seaward. Ballywilline Hill and Ranachan Hill (Figure 7.83, 7.85 & 7.88) are also very low in both area and percentage of agricultural land visible. Both forts have very good visibility of agricultural land over the 5 km distance and both have excellent general visibility. They, and probably Knock Scalbart (Figure 7.81 & 7.82), may have a more distant relationship with agricultural land and arguably with agricultural activity in general if their exceptional topographic prominence and high altitude is taken into account. Cnoc Araich is completely surrounded by agricultural land and its 1 km and 5 km land visibility reflects that – it may have a closer, more direct connection with that land than the hilltop forts to the north (Figure 7.87).

There is a higher percentage of agricultural land in the 1 km viewsheds of sites than there is in their 1 km surroundings. 60% of sites' viewsheds are made up of agricultural land, compared to 56.5% of the actual land surrounding them. Size A sites certainly exhibit this pattern of advantageous placement to see agricultural land, with 71.4% visibility compared to 64.9% proximity while size D and E are actually disadvantageously placed in this regard – agricultural land comprises a lesser percentage of their viewsheds than their 1 km surroundings in total (Tables 7.2 & 7.3). This would suggest that sites that Harding would class as dun-houses are more favourably positioned to view agricultural land than larger enclosures in southern Kintyre. For size A sites, a K-S test shows percentage visible and percentage of land not statistically likely to differ as datasets, however the null hypothesis was much more narrowly rejected than for size D and E sites. (Figure 7.92; Figure 7.93).

Figure 7.80: *View inland from Kildonan Point, showing local agricultural land.*

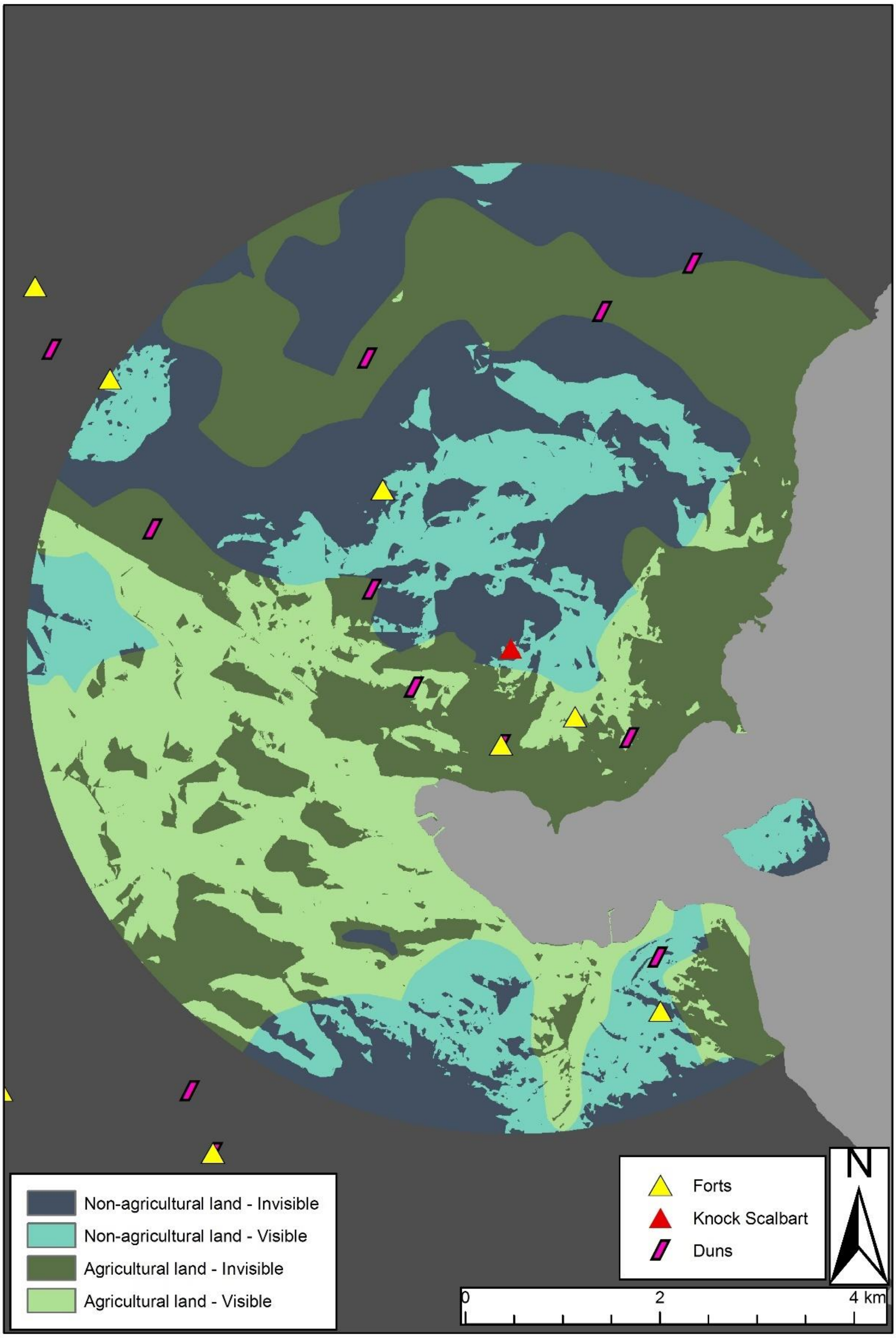

Figure 7.81: *5 km visibility of agricultural land from Knock Scalbart (a size D site).*

Figure 7.82: *View south west from summit of Knock Scalbart, looking across the Laggan.*

Figure 7.83: *View south east from Ranachan Hill showing spatial removal from, but good long distance visibility of, farming land. Knock Scalbart is the summit in the back left centre.*

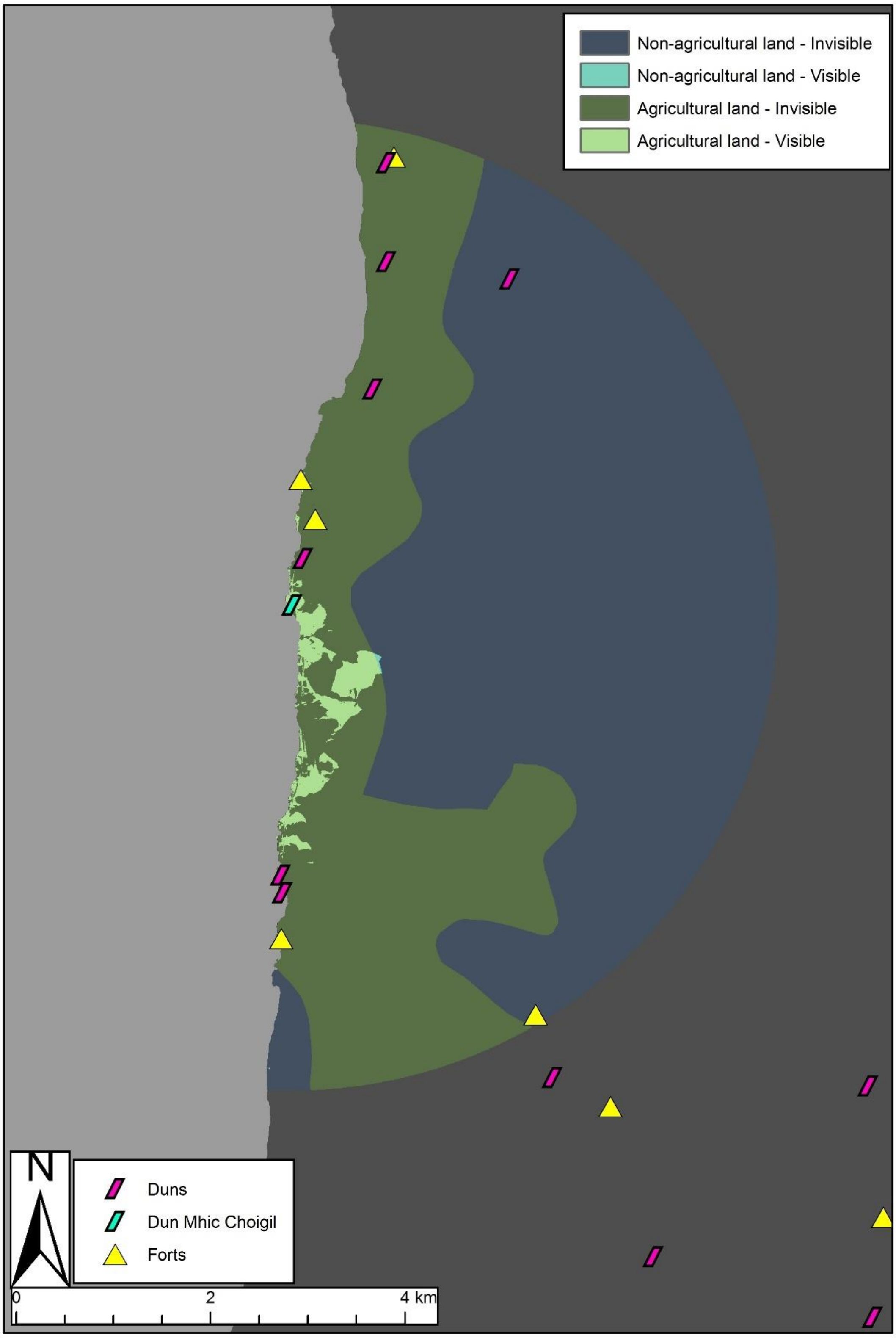

Figure 7.84: *5 km visibility of agricultural land from Dun Mhic Choigil (an irregular size A site).*

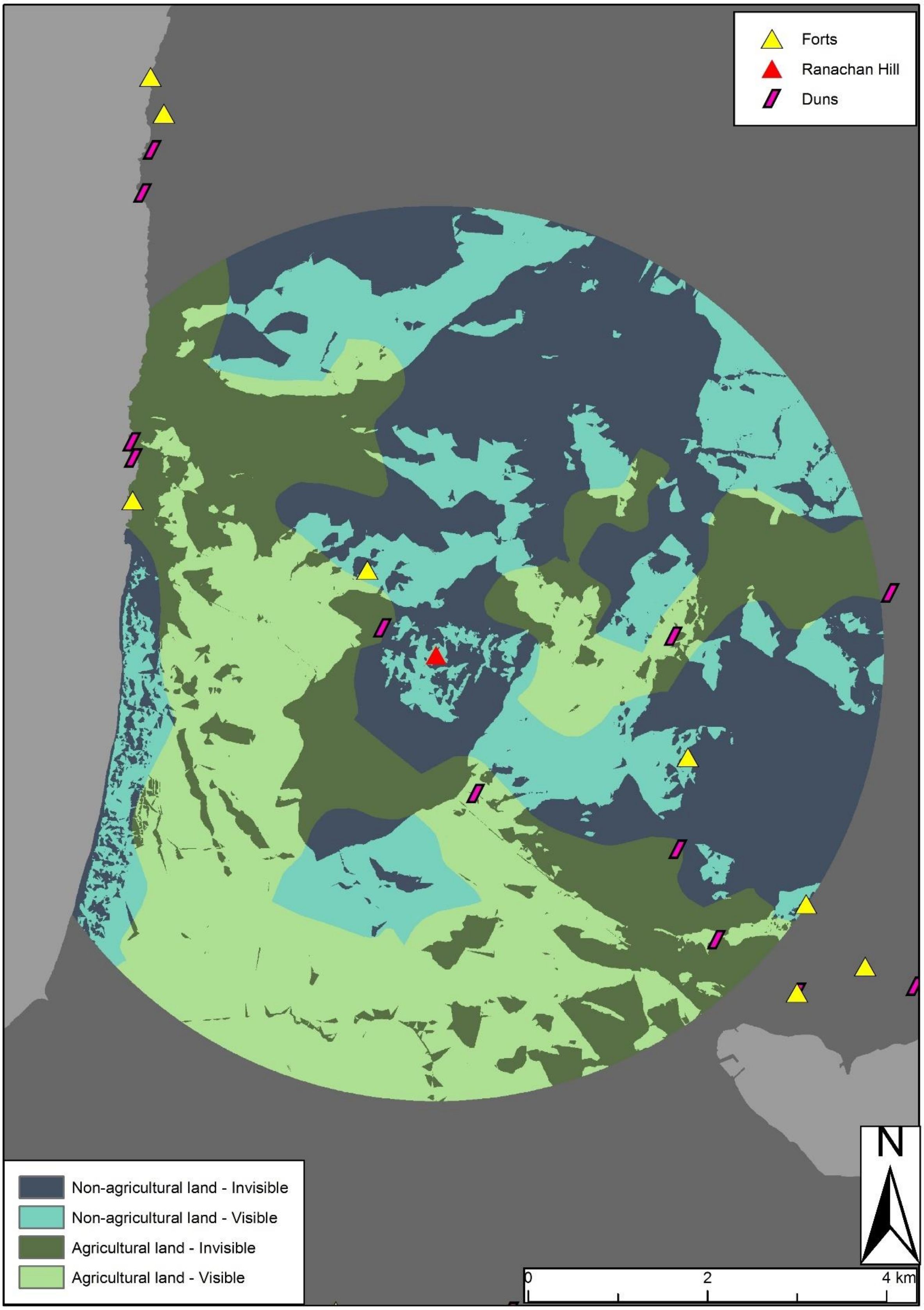

Figure 7.85: *5 km visibility of agricultural land from Ranachan Hill (a size D site).*

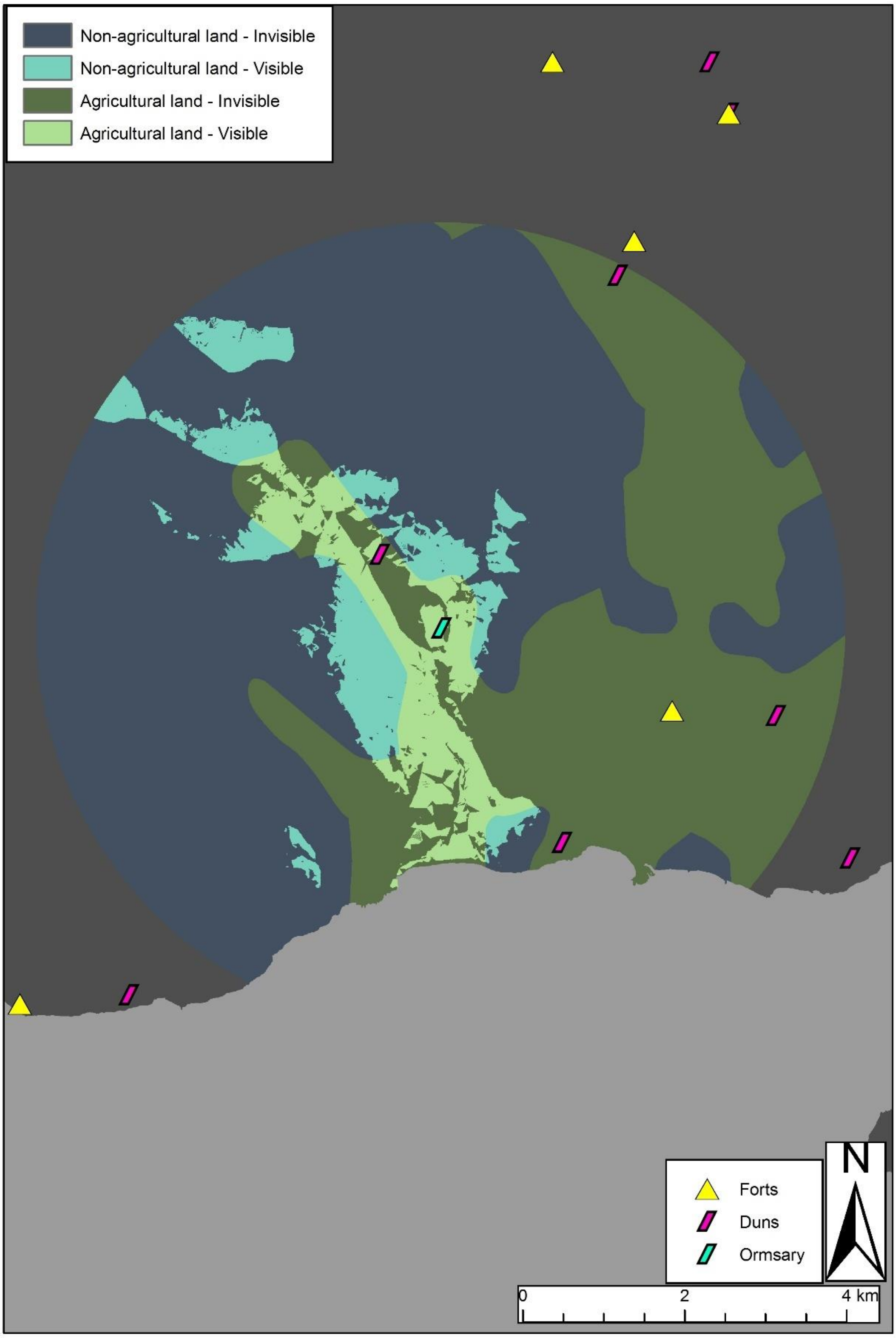

Figure 7.86: *5 km visibility of agricultural land from Ormsary (a sub-circular size A site).*

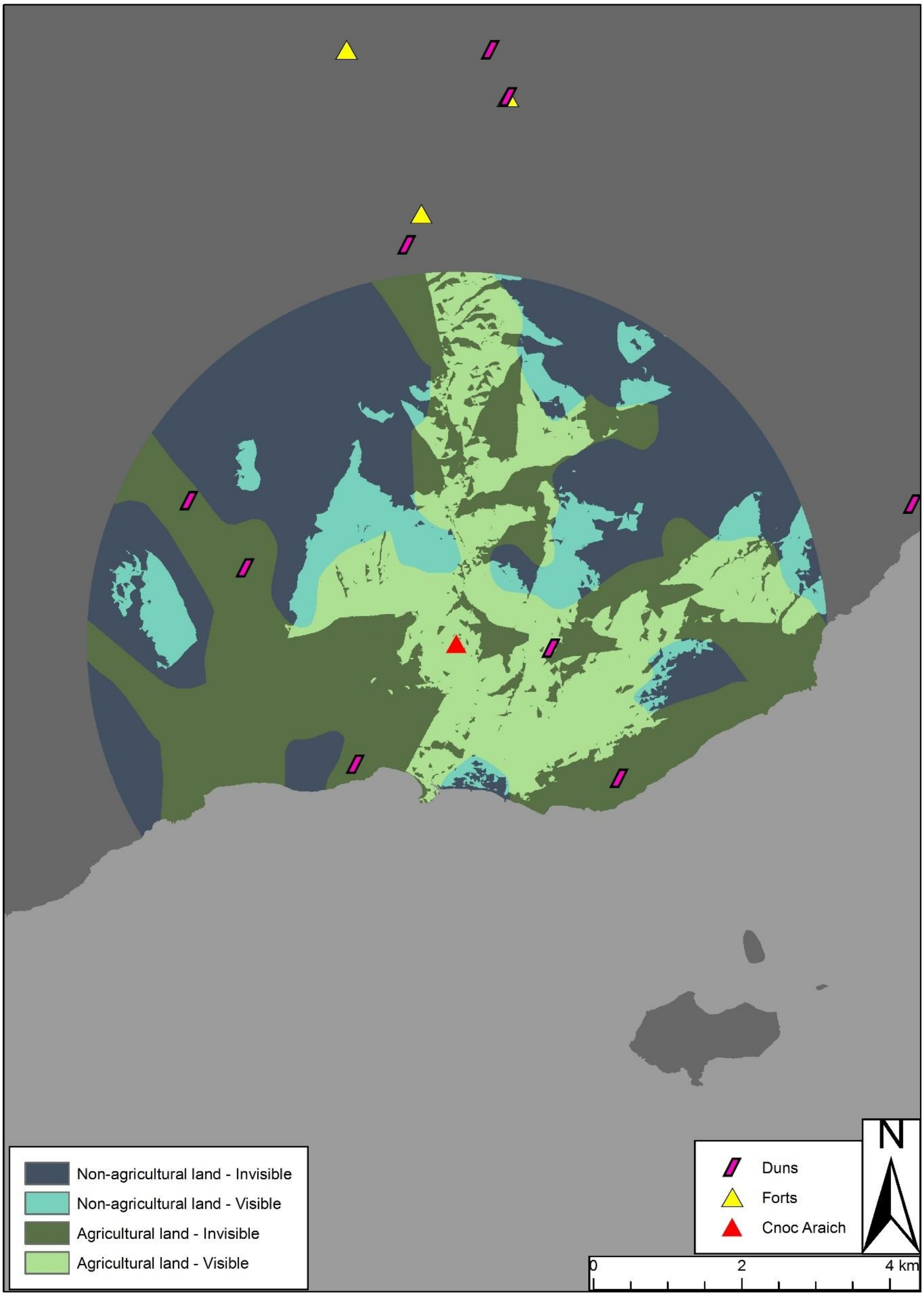

Figure 7.87: *5 km visibility of agricultural land from Cnoc Araich (a size E site).*

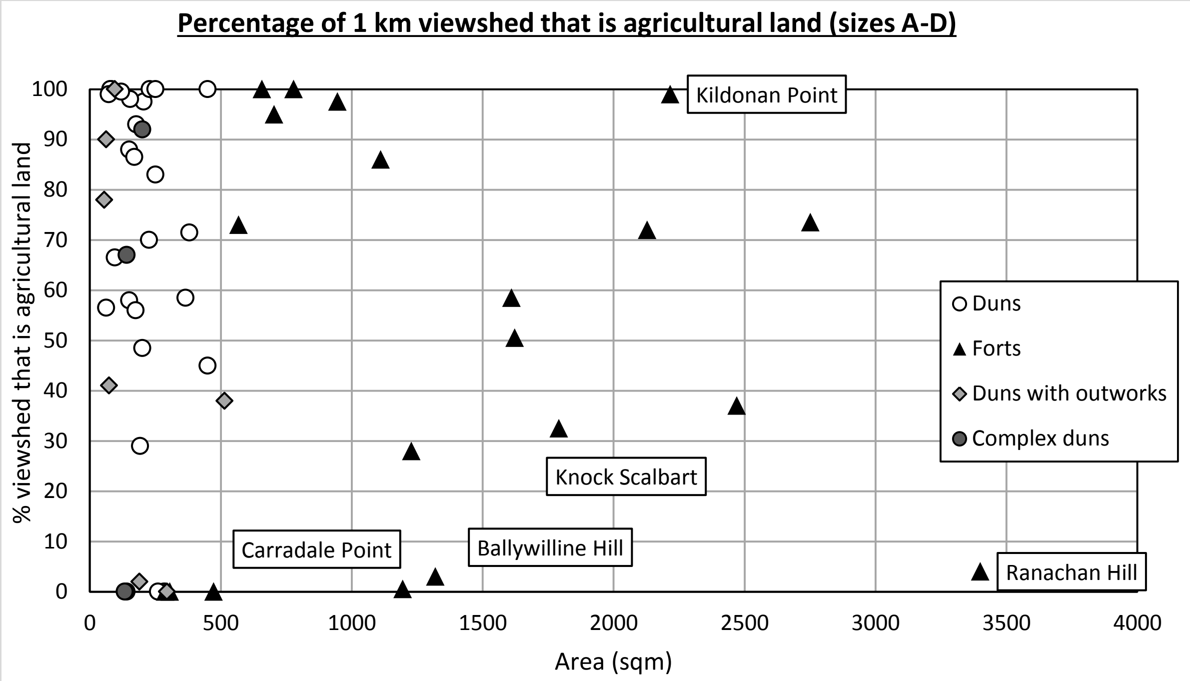

Figure 7.88: *The percentage of each site's 1 km land viewshed that is agricultural land (size A to D).*

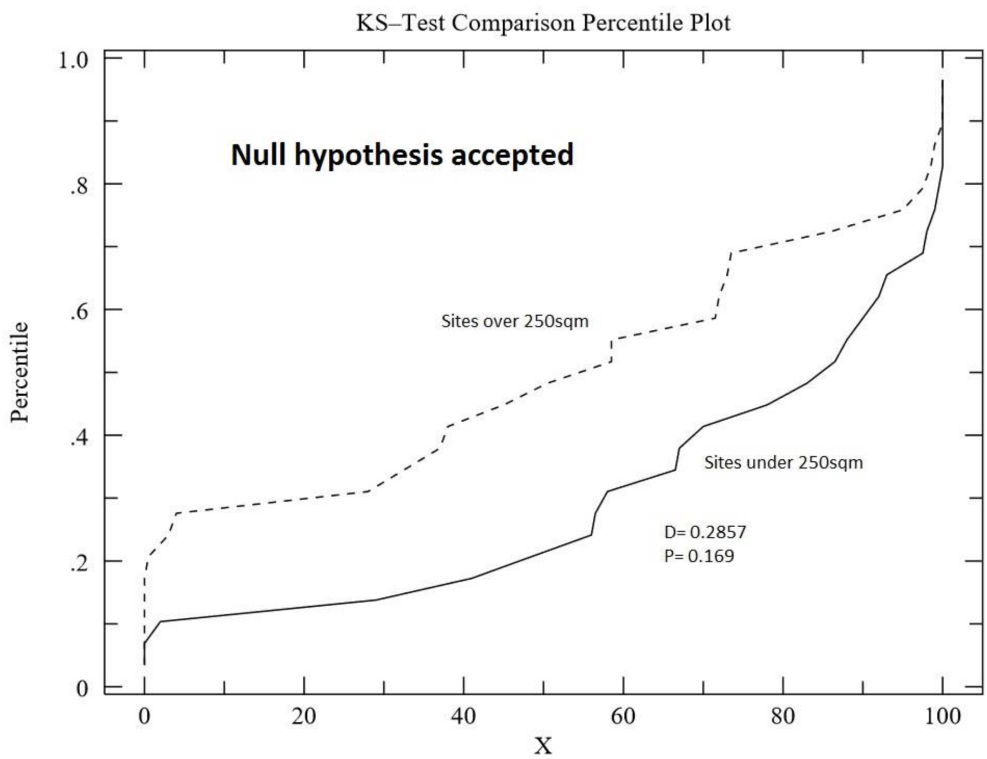

Figure 7.89: *K-S test comparing the percentage of agricultural land in the landward viewsheds of size A sites with sizes B to E, over a 1 km radius. This suggests that the visibility of sites under 250 m^2 is made up of more farming land than larger enclosed sites.*

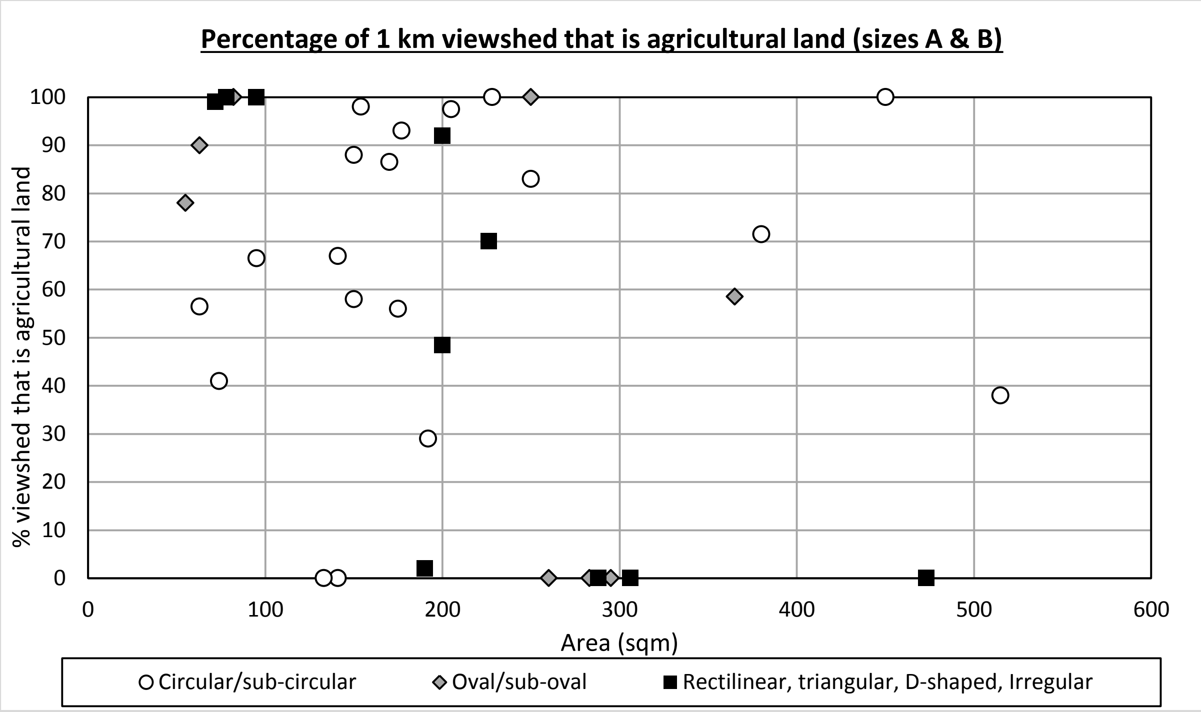

Figure 7.90: *The percentage of each site's 1 km land viewshed that is agricultural land. This shows that there may be a significant difference between size A sites (up to 250 m^2) and many size B sites.*

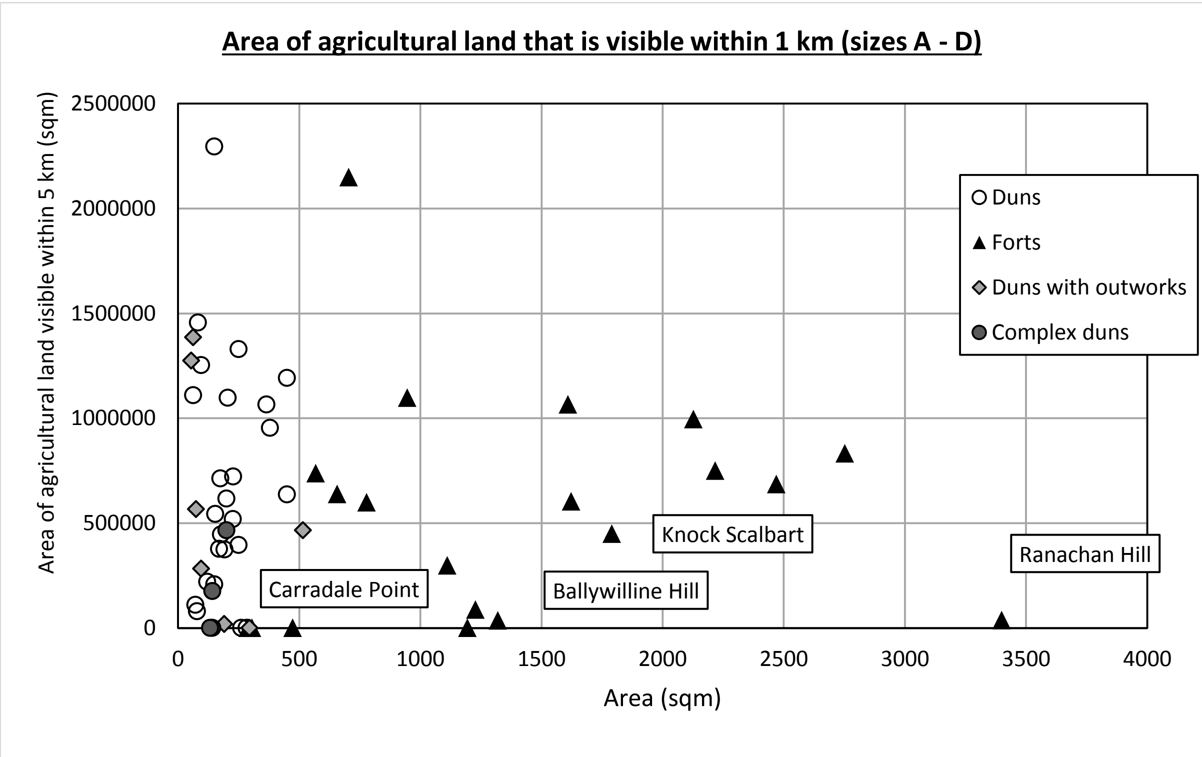

Figure 7.91: *The area of agricultural land visible from each site within 1 km. Size A sites do not much differ from larger enclosed sites.*

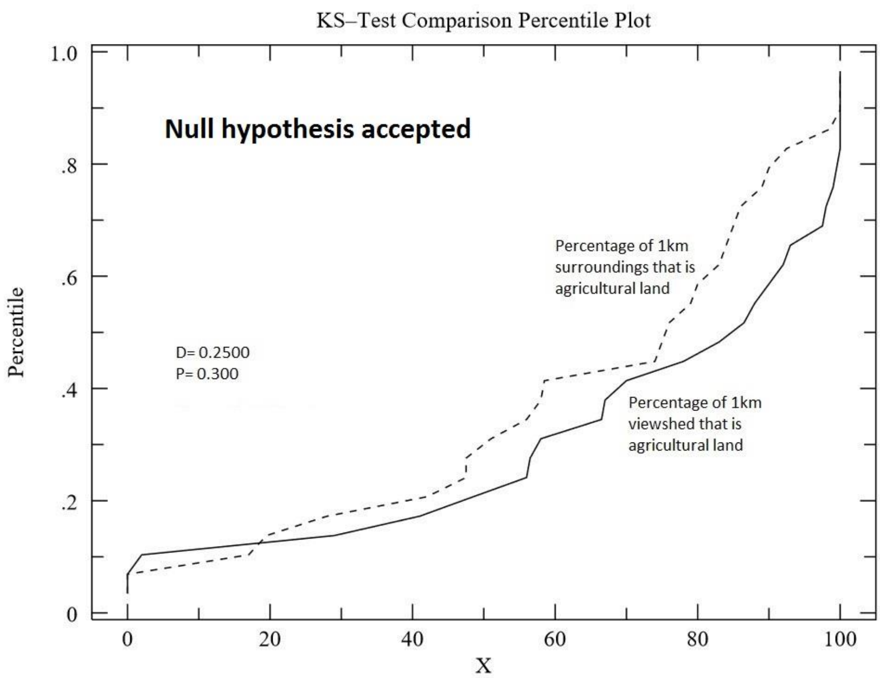

Figure 7.92: *K-S test comparing the percentage of agricultural land in the landward viewsheds of size A sites with the percentage of land within 1 km that is agricultural land. This shows that the smallest sites may be positioned to view local farming land.*

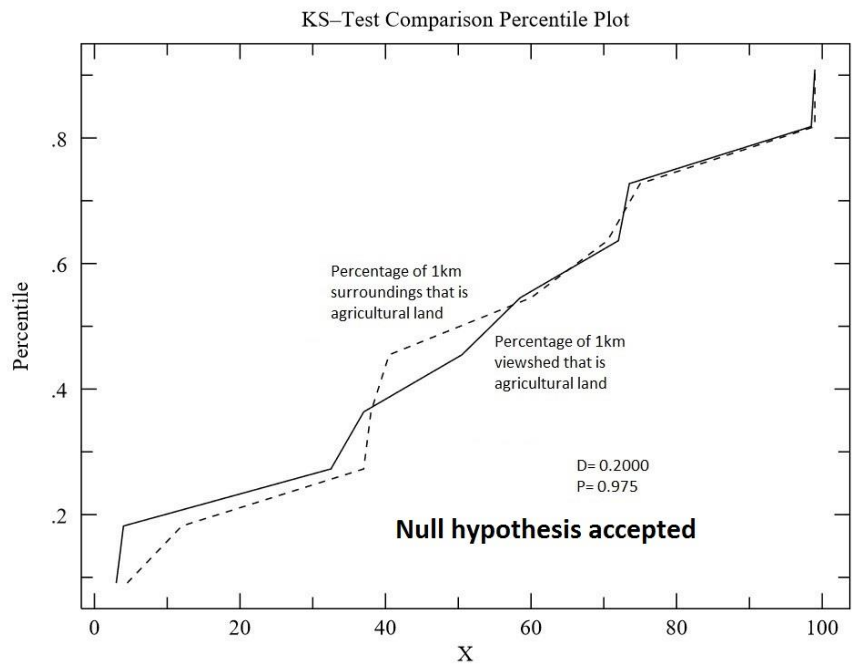

Figure 7.93: *K-S test comparing the percentage of agricultural land in the landward viewsheds of size D & E sites with the percentage of land within 1 km that is agricultural land. This suggests that the larger enclosures in southern Kintyre are not positioned to view nearby farming land.*

7.2.7 Visibility from the sea

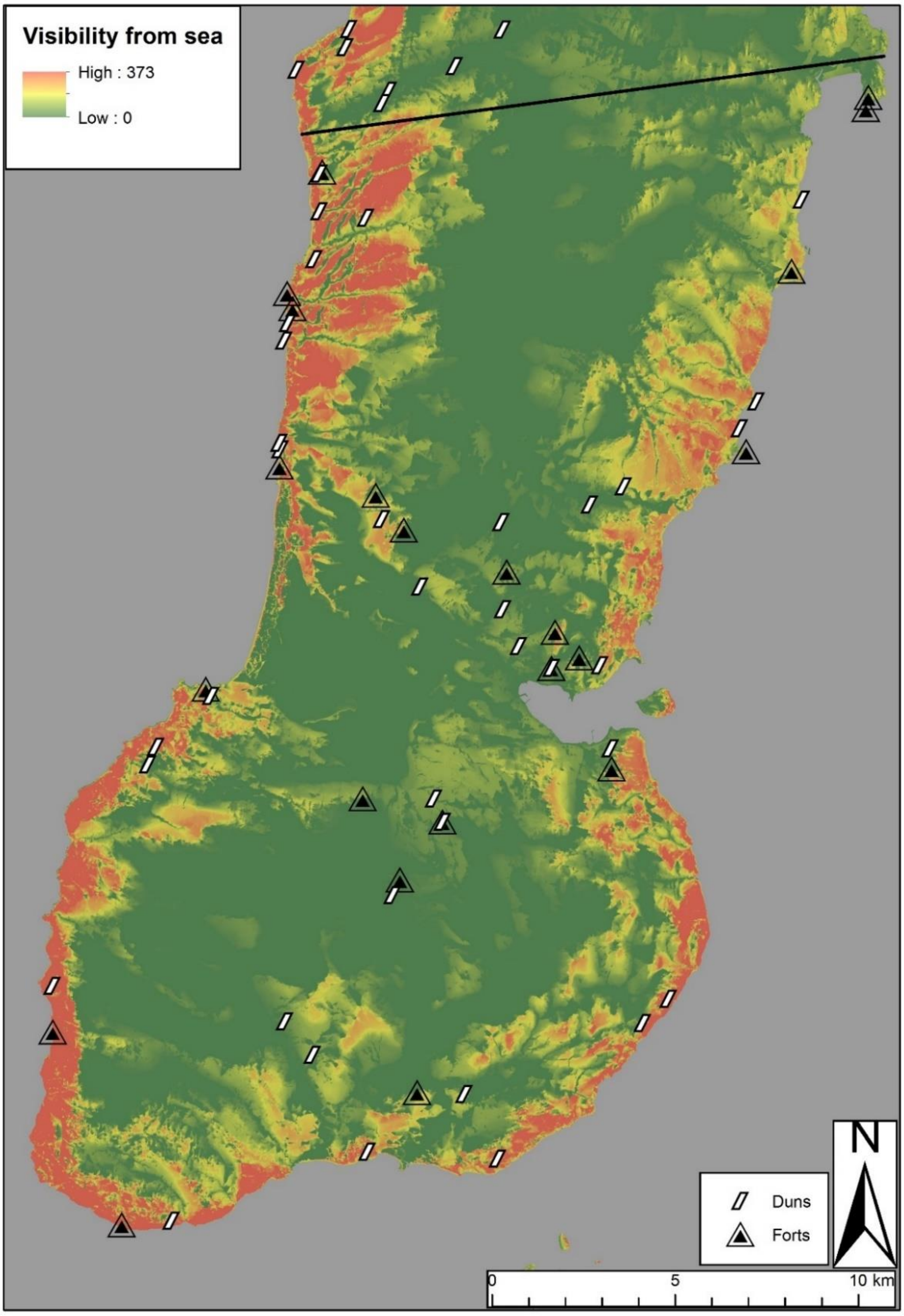

Figure 7.94: *Results of cumulative viewshed representing inherent visibility from sea of case study area.*

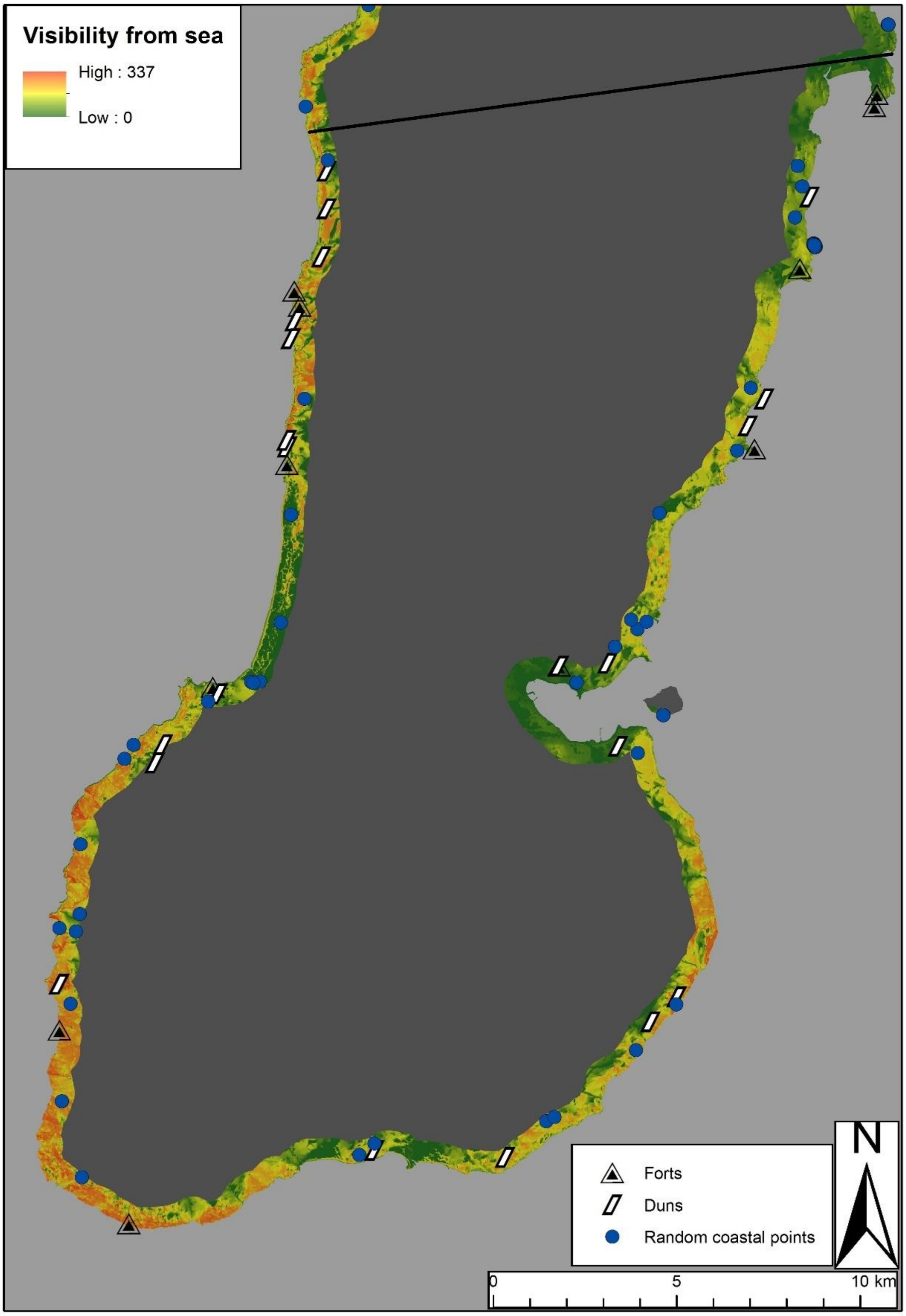

Figure 7.95: *Results of cumulative viewshed representing inherent visibility from sea of case study area within 600 m of the coast. Includes coastal sites and randomly generated coastal points used for analysis.*

The visibility of southern Kintyre from sea was measured using a cumulative viewshed taken from 1500 random points in the sea within 15 km of land (Figure 7.94). The visibility of archaeological sites from the sea was ascertained using both the mean visibility of the interior of each site and the most visible point. It was previously noted that sites classed as duns and forts do not differ statistically with respect to their distance from the coast. There is, however, a greater difference between the traditional classification with regard to their visibility from the sea, with duns likely to be more visible at a 63.2% confidence interval if the mean visibility of the site interior is used (Figure 7.96).

5 m by 5 m pixels on ground occupied by enclosed sites can be seen by 97.6 random points on average compared to 35.7 for all land in southern Kintyre (Table 7.4), although the generally coastal distribution of sites in the case study area makes it difficult to judge whether they are unusually positioned to be visible from the sea. It was observed that many enclosed sites were located within 5-600 m of the coast (see Figure 7.10 & 7.11). Therefore, the mean visibility of a pixel on ground occupied by sites within 600 m of the coast was compared with the mean visibility of all land within 600 m of the coast, and statistically assessed relative to 80 random pixels in that area (Figure 7.95). Land on and within the enclosing works of coastal sites could be seen from 138.7 points on average compared to a mean value of 101 for all land close to the coast (Table 7.5). Coastal duns were slightly more visible than coastal forts in this regard, but not statistically likely to differ as a dataset according to a Kolmogorov-Smirnov test (Figure 7.97) – this correlated with the same comparison between the RCAHMS classifications in the case study area as a whole (Figure 7.96). When the visibility of sites was compared to the 80 random coastal points, the mean visibility of site interiors did not differ at a statistically significant level from the random points, while sites were more visible below the 70th percentile and random points more visible above this (Figure 7.98). This is likely to reflect a number of the random points being in unsuitable places for settlement such as steep cliff edges that are extremely prominent from the sea. If the most visible pixel on or within the defences of a site was used, the sites were clearly more visible than the random points at a statistically significant level (Figure 7.99).

Type	Mean visibility of site footprint	Most visible point (average)
Total case study area	35.7	
All sites	97.6	141.3
Duns	101.7	134
Forts	90.6	153.8
Size A	102.8	138.7
Size B	126.5	160.9
Size C	90	148.8
Size D & E	57.4	121

Table 7.4: *Average number of random sea points that can see sites in the case study area.*

Type	Mean visibility of site footprint	Most visible point (average)
Land within 600 m of coast	101	
All sites within 600 m of coast	138.7	192.8
Duns	142	187.6
Forts	131.8	203.7
Size A	140.8	189.4
Size B	175.7	226.7
Size C	104.7	168.2
Size D & E	82	199

Table 7.5: *Average number of random sea points that can see sites and land within 600 m of the coast in the case study area.*

If the most visible points on or within the defences of all sites in the case study area are used to compare their visibility from the sea, the sites that are located closest to the coast are unsurprisingly also generally the most visible. Size C sites classed as forts are as or more visible than most duns (Table 7.4; Figure 7.100, Figure 7.10). These sites are mainly located south of the Laggan, with vistas looking out across the North Channel towards Ireland. Sites of this size with excellent visibility of the sea include Westport and Killocraw, but also sites further inland like Knock Scalbart. Sites with surprisingly mediocre sea visibility given their coastal locations include Carradale Point – whose seaward visibility is focused across the Kilbrannan Sound towards Arran – and the duns of Kildalloig, Baraskomill and Belfield, all of which are close to the coast but their visibility is restricted to Campbeltown Loch. Three out of the four size A sites with complex architecture have high sea visibility, while four of the six size A sites with outworks have exceptionally poor sea visibility (Figure 7.100).

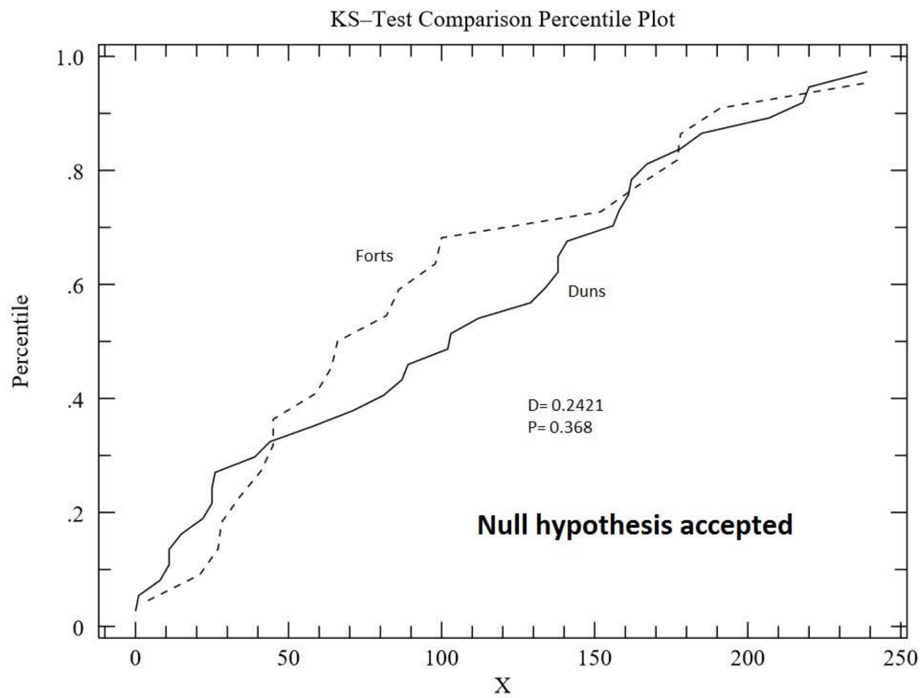

Figure 7.96: *K-S test comparing the visibility from sea of sites classed as forts and duns (mean visibility).*

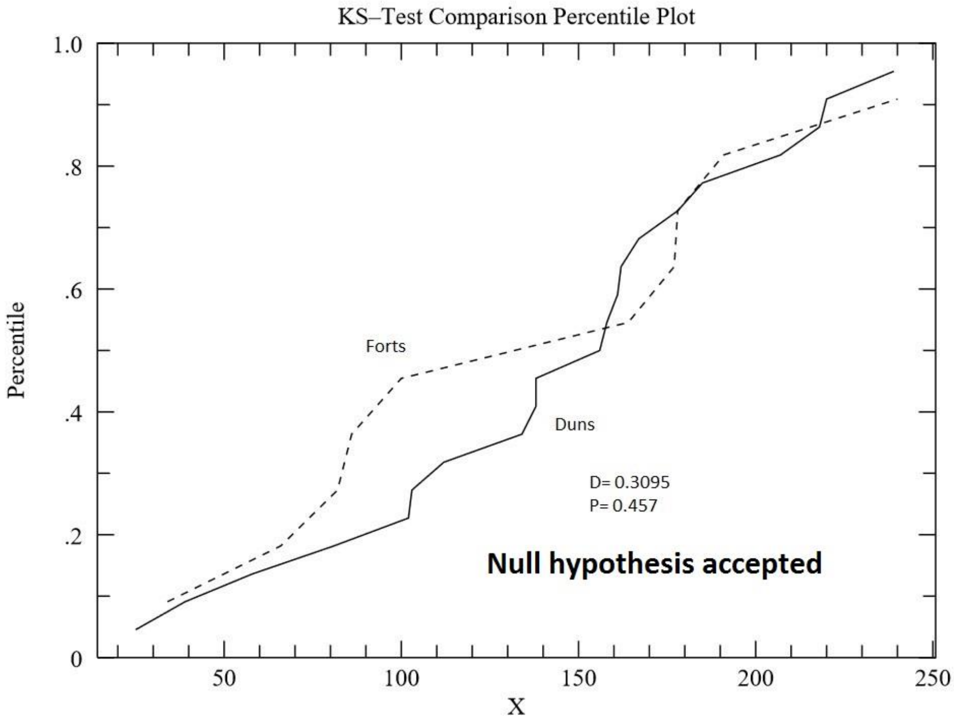

Figure 7.97: *K-S test comparing the visibility from sea of all sites classed as forts and duns within 600 m of the coast (mean visibility)..*

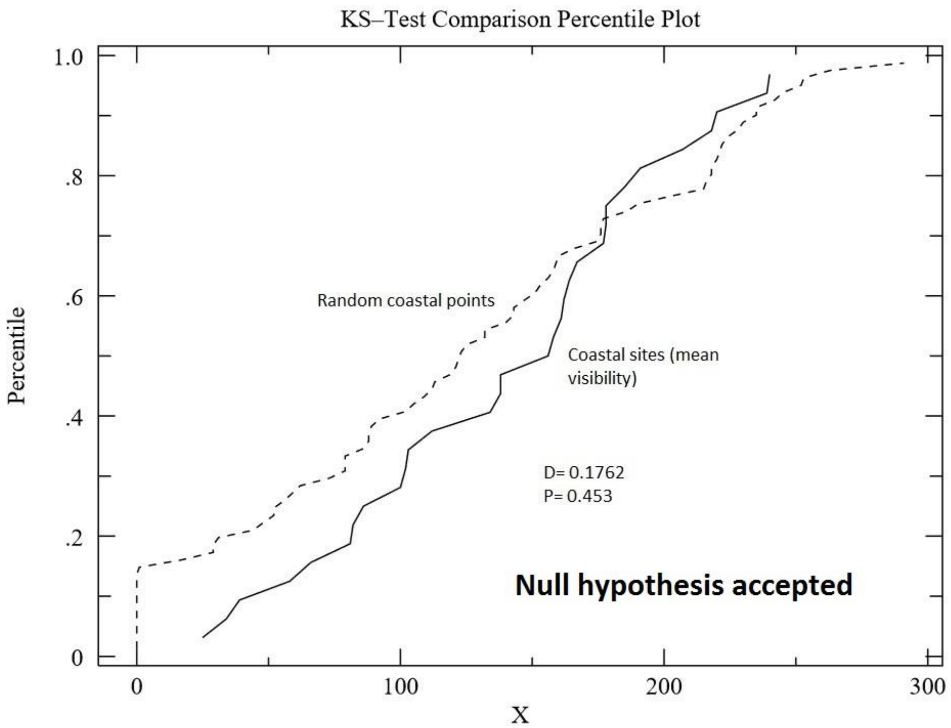

Figure 7.98: *K-S test comparing the mean visibility from sea of all sites within 600 m of the coast with 80 randomly generated coastal points.*

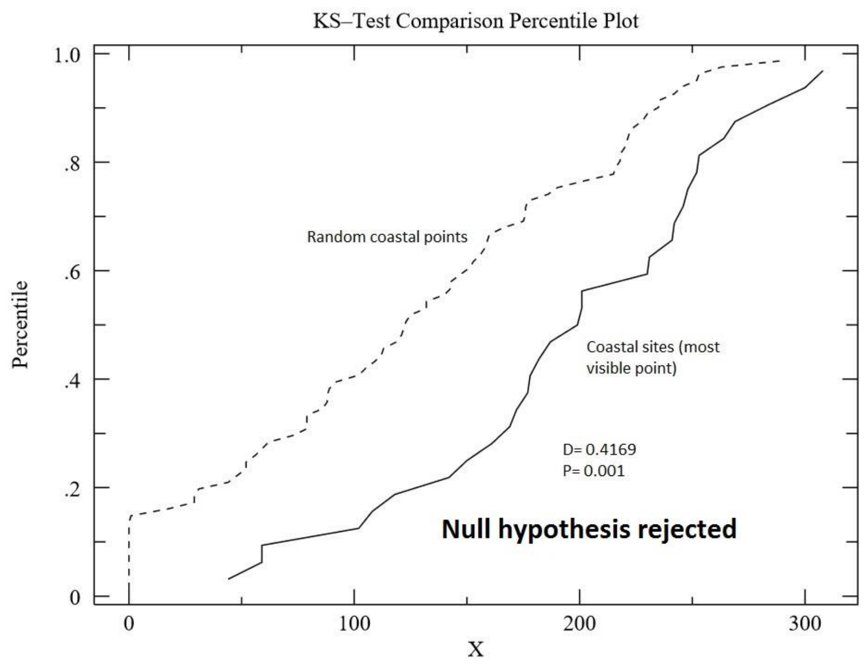

Figure 7.99: *K-S test comparing the visibility from sea of all sites within 600 m of the coast with 80 randomly generated coastal points (using the most visible pixel on and within the defences). Showing that when the most visible pixel is used, sites are clearly more visible than the random coastal points.*

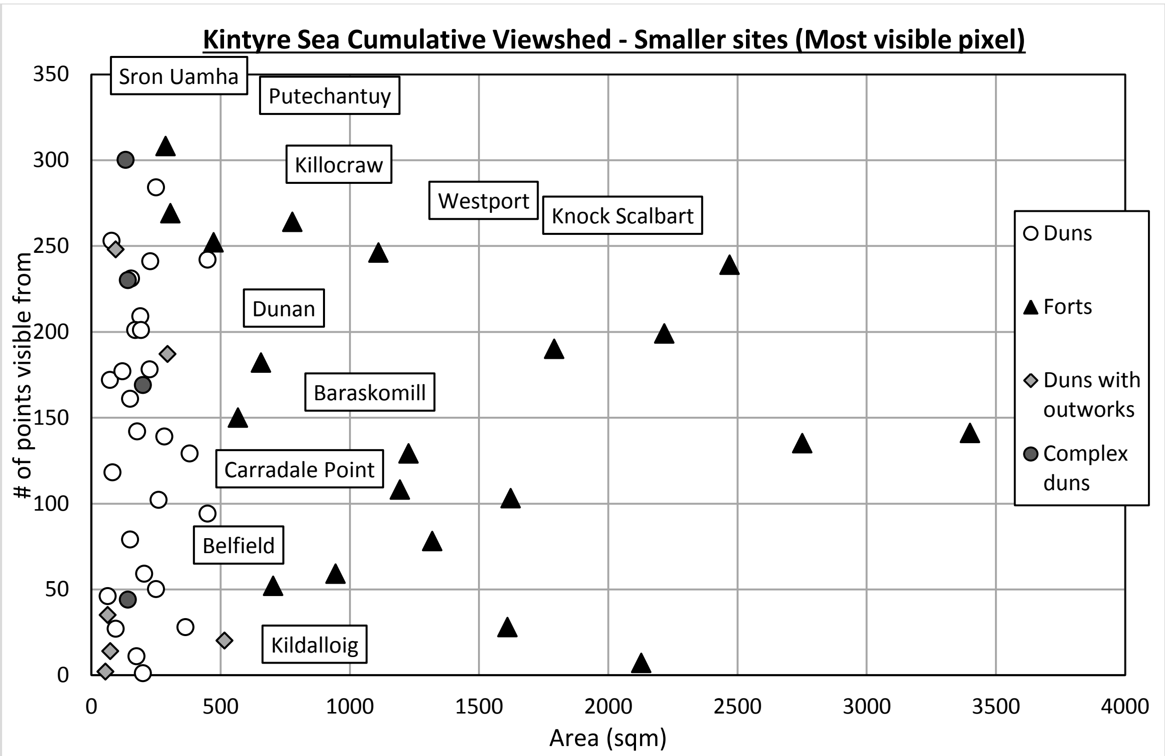

Figure 7.100: *Visibility of all sites from the sea using the most visible pixel on or inside the defences of each site. Size B and C sites classed as forts are among the most visible sites.*

7.2.8 Site interrelationships

It is debateable whether exploring site intervisibility is of significance in a landscape where most enclosed sites are positioned in visible places, and where so little chronological certainty exists. Even if certain classes of site are unusually intervisible with others that arguably tells us little. It may suggest that sites with those characteristics are likely to be contemporary or part of the same societal framework, but not with any degree of certainty. A site that is a central place, as proposed by Cunliffe (1984; 2003; 2005) for southern British hillforts, may be likely to have excellent visibility to and from other sites. Perhaps a site with visibility of many past, abandoned monuments may be more likely to have a ceremonial role. There is no way without widespread excavation to determine this, however. Few patterns are visible when comparing the percentage of other sites visible from enclosed sites over a long distance (10 km) with those sites' general land visibility (Figure 7.44 & 7.45, Figure 7.101 & 7.102). A few enclosed sites like Machrihanish and Kildonan Point do have relatively higher visibility of sites than land within a 10 km radius, as does Cnoc Sabhail among size A sites (Figure 7.102).

Ranachan Hill can see the most enclosed sites within 10 km (n = 17), which is unsurprising as it has the best long range visibility of any site (Figure 7.103). On average, sites in southern Kintyre can see five others within this radius, size A and B sites four, C and D seven and sizes D and E eight, this pattern reflecting the greater landscape visibility of the larger enclosures (Table 7.6). Similarly sites classed as forts are likely to be able to see more sites than duns within this distance at a 93% confidence interval using a Kolmogorov-Smirnov test (Figure 7.104). Over the shorter 5 km distance Knock Scalbart and the circular size A enclosure at Balegreggen Hill can both see eight other sites, two more than Dun Sheallaidh, Killocraw, both enclosed sites at Kildalloig and Ranachan Hill (Figure 7.105). Balegreggen Hill, Dun Sheallaidh, Kildalloig dun and Killocraw can perhaps see more sites than expected given their visibility of land at this distance (Figure 7.104, Figure 7.55). Nothing else about them suggests that these sites should be regarded as high status or exceptionally positioned, although Dun Sheallaidh is an outlier in the RCAHMS dun category, given its large size (450 m^2). On average, there is some distinction between enclosed sites with differing internal areas over the 5 km radius – sizes A and B can see two other sites, while sizes C, D and E can see three. The RCAHMS site classes are statistically likely to differ as datasets when assessing number of sites visible within this distance (Figure 7.107), with more sites visible from forts.

	10 km	**5 km**	**1 km**
All sites	5	2	0.44
Duns	4	2	0.39
Forts	7	3	0.52
Size A	4	2	0.43
Size B	4	2	0.27
Size C	8	3	0.5
Sizes D & E	8	3	0.6

Table 7.6: *Average number of enclosed sites visible from various categories of site over 10 km, 5 km and 1 km radii.*

	10 km	**5 km**	**1 km**
All sites	24.5	8	0.89
Duns	24.5	8	0.78
Forts	24.5	7.5	1.1
Size A	24.5	8	0.79
Size B	22	7	0.73
Size C	23.5	7	1.13
Sizes D & E	28	9	1.2

Table 7.7: *Average number of enclosed sites within 10 km, 5 km and 1 km of various categories of site.*

It is striking how little pattern there is in the data in Figure 7.108 & 7.109, comparing the number of sites that are positioned within 10 km and 5 km of enclosed sites in southern Kintyre. The RCAHMS dun and fort categories are very similar – in fact they have nearly the same number of sites on average within both radii (Table 7.7). Sizes D and E have 28 sites on average within 10 km, slightly more than sizes A to C, and this pattern is replicated within the 5 km radius, suggesting that the largest sites may have been more centrally located in the settlement pattern, and that they are less likely to be found in isolated areas (Table 7.7). Sizes C, D and E have more than one site within 1 km on average, slightly more than sizes A and B, again indicating that larger enclosed sites are rarely isolated. Indeed distribution maps would suggest that sites classed as forts often have a dun within roughly one to two kilometres – this is even true of some of the most isolated forts such as Dunan or Sron Uamha (see Figure 7.5 & Figure 7.66). Duns are more likely to occur without forts, although it is notable how uneven the spread of enclosed sites is in southern Kintyre (Figure 7.5). There are areas that are suitable for later prehistoric enclosed sites, where such sites are clustered, and regions that are avoided. It is probable that this is related to patterns discernible in the studies of site location and visibility discussed earlier in this chapter.

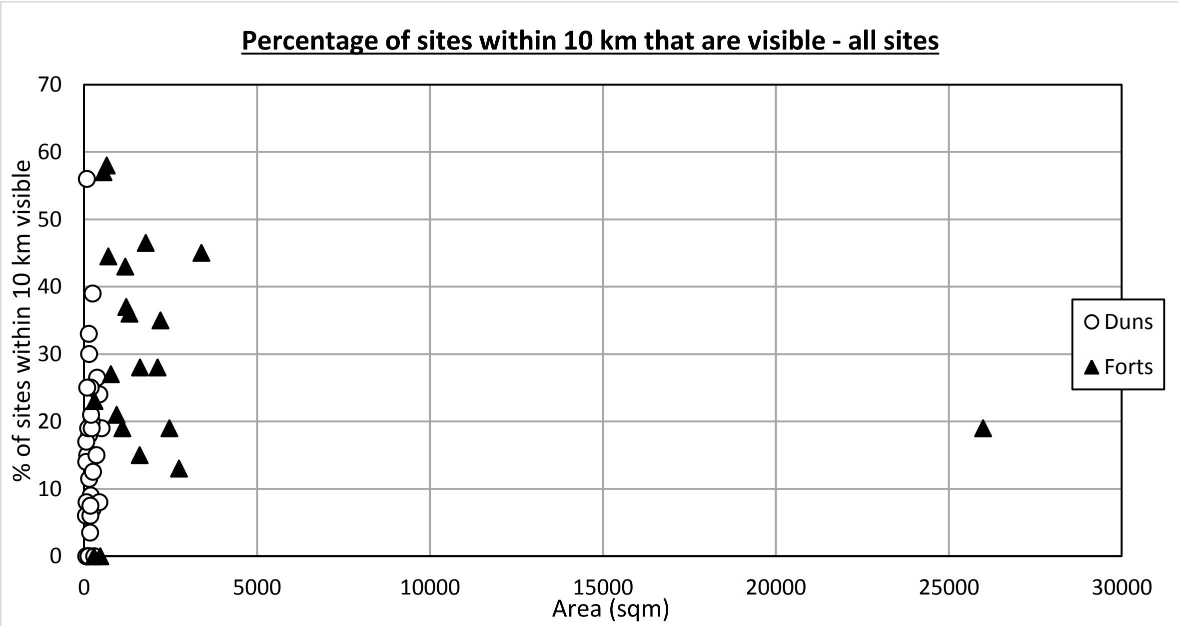

Figure 7.101: *The percentages of sites within 10 km of all enclosed sites that are visible. This chart corresponds broadly to general land visibility patterns seen in Figure 7.44.*

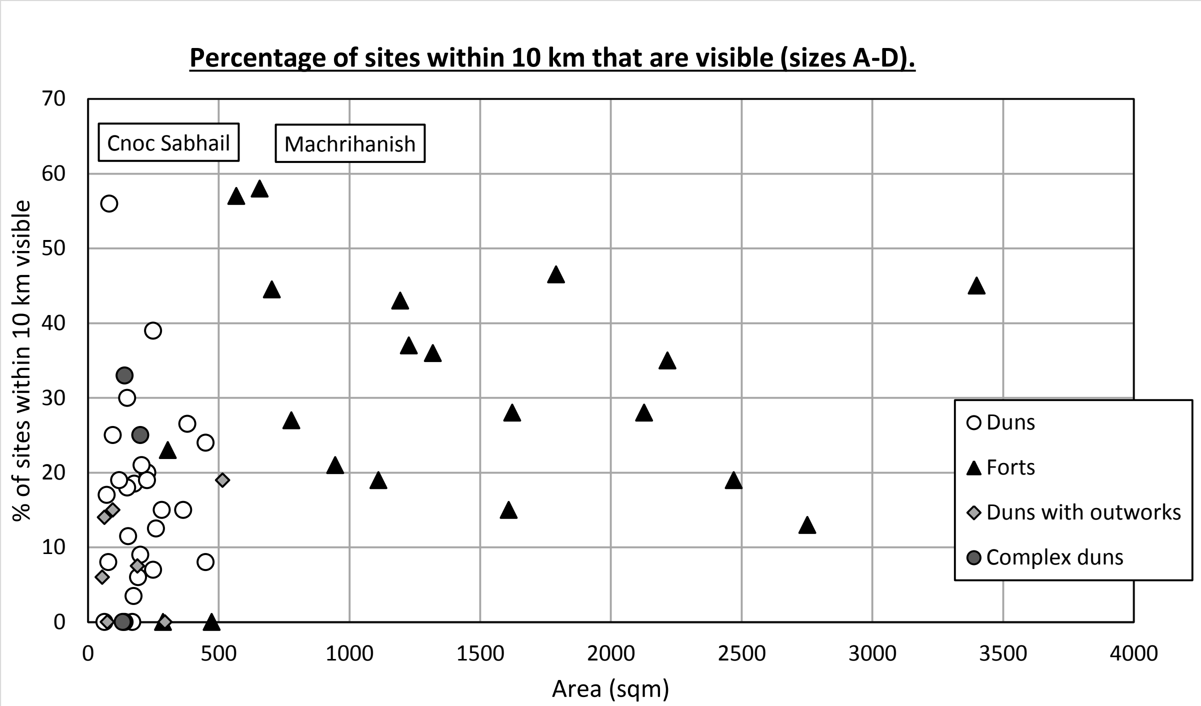

Figure 7.102: *The percentages of all sites within 10 km of enclosed sites that are visible. The general pattern is similar to Figure 7.45. Outliers are Cnoc Sabhail, Machrihanish and Saddell House.*

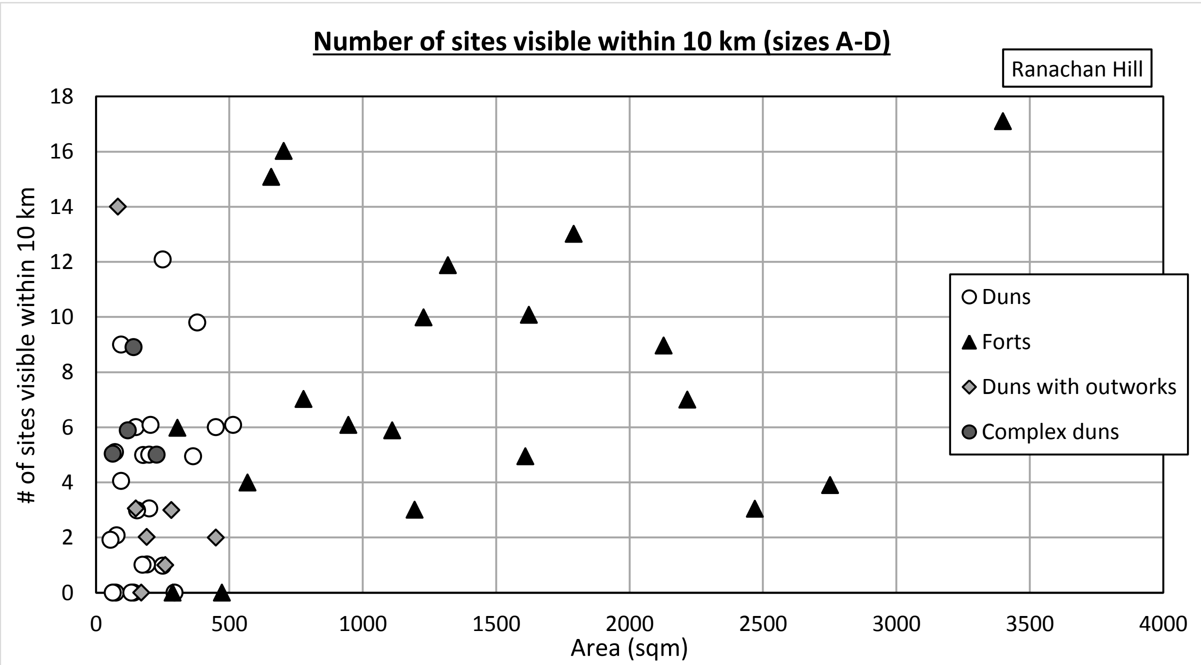

Figure 7.103: *The number of all sites within 10 km of enclosed sites that are visible. Ranachan Hill, Machrihanish and Balloch Hill can see most other sites.*

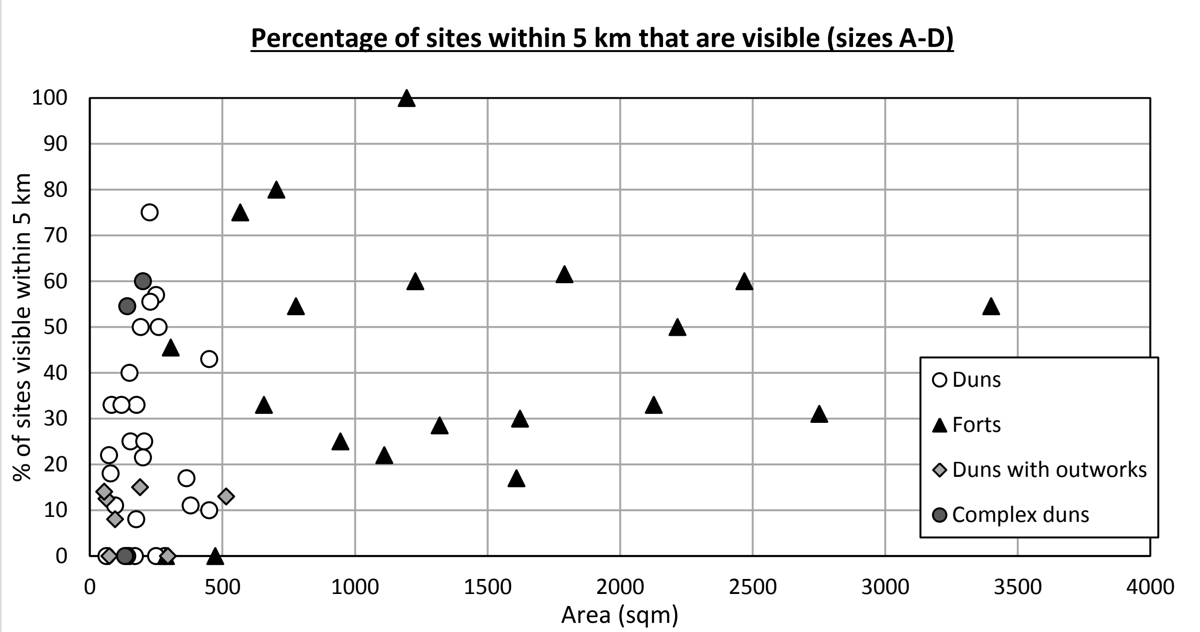

Figure 7.104: *The percentages of all sites within 5 km of enclosed sites that are visible. When compared to the percentage of land visible within that distance (Figure 7.55), there are several enclosed sites that have higher visibility of other sites than might be expected, given a null hypothesis. These are identified below, in Figure 7.105.*

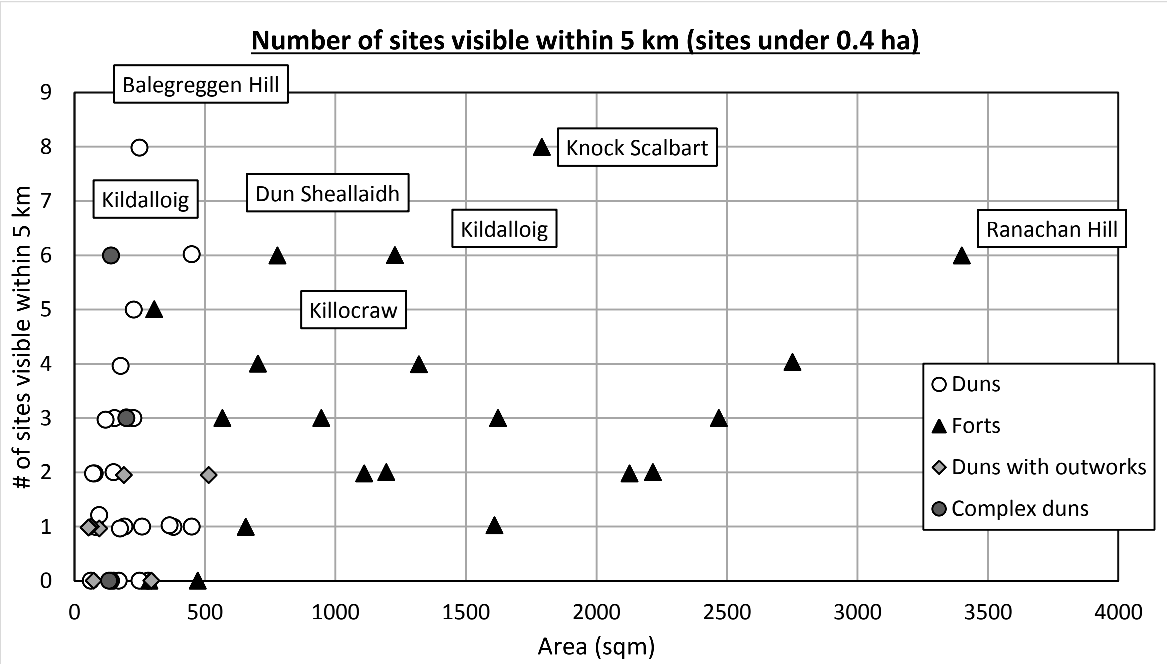

Figure 7.105: *The number of sites within 5 km of enclosed sites that are visible. Enclosed sites with the highest numbers visible are labelled.*

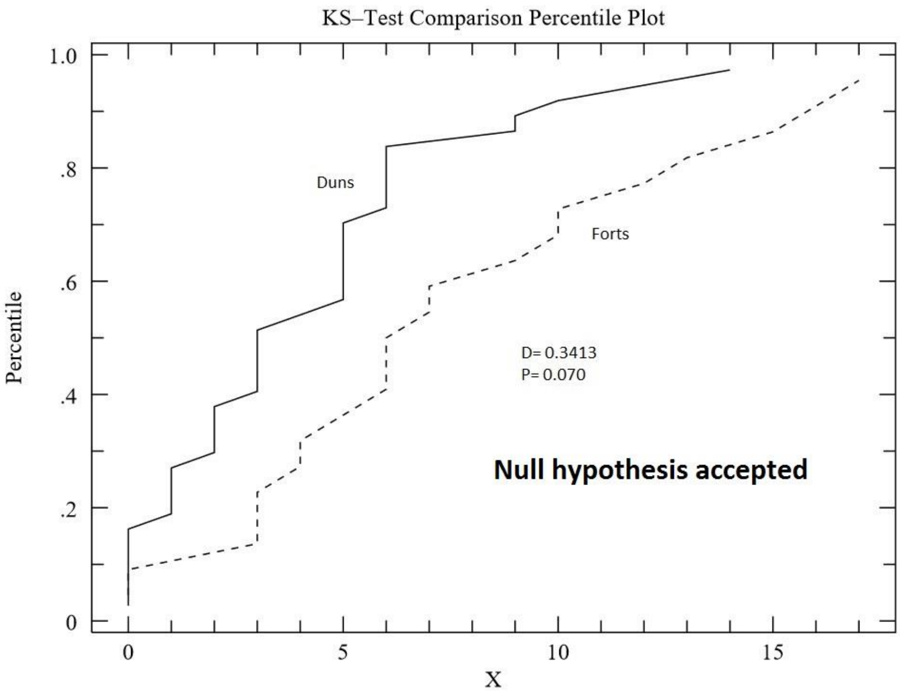

Figure 7.106: *K-S test assessing the number of other sites visible from forts and duns within a 10 km radius. Sites in the traditional fort classification are likely to be able to see more sites.*

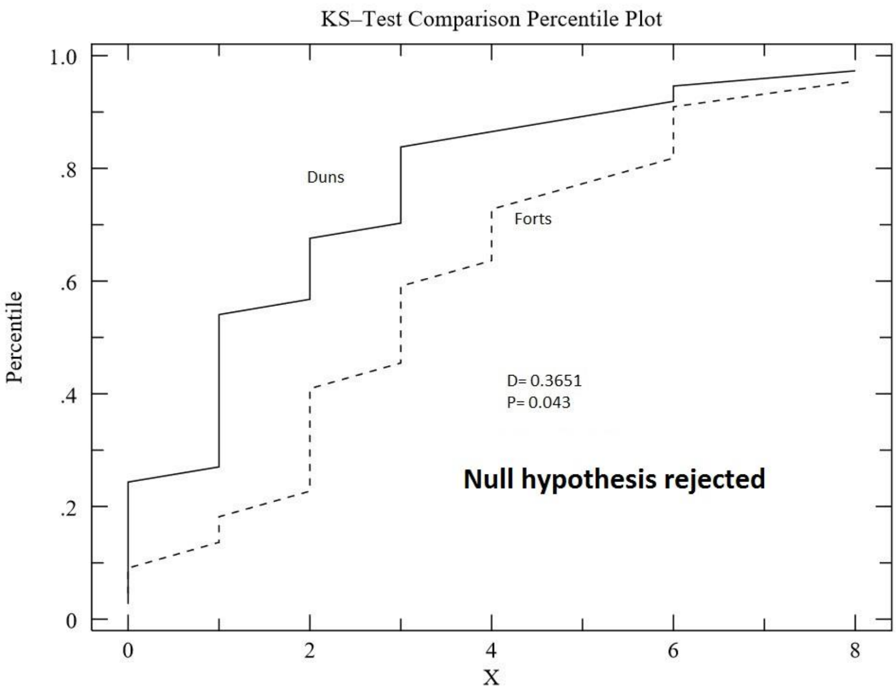

Figure 7.107: *K-S test assessing the number of other sites visible from forts and duns within a 5 km radius. Again, the fort class is very likely to comprise a different distribution to the dun class.*

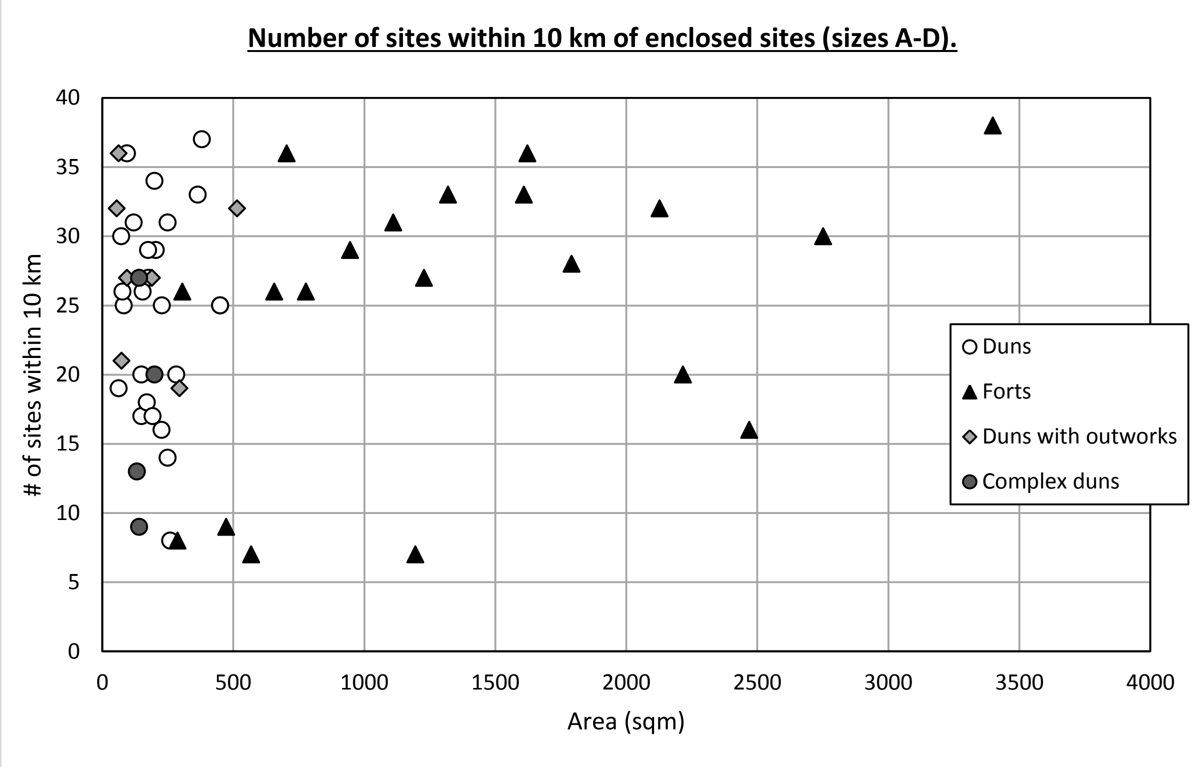

Figure 7.108: *Number of sites within 10 km of all enclosed sites in southern Kintyre. Sizes C, D & E tend to be in districts that are more populated.*

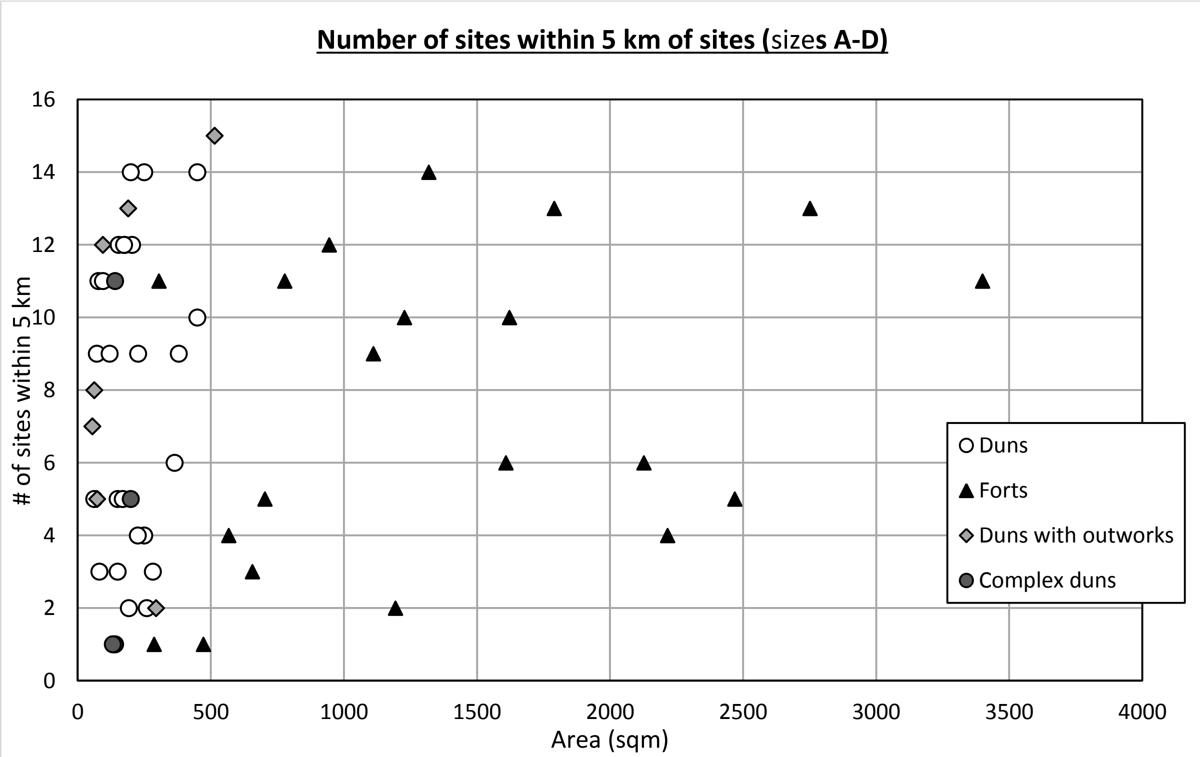

Figure 7.109: *Number of sites within 5 km of enclosed sites in southern Kintyre. No clear pattern is discernible.*

7.3 Discussion

There are enclosed sites in southern Kintyre ranging from 55 m^2 in size to 26000 m^2 (2.6 ha). Apart from the largest site, Cnoc Araich, the remainder form a continuum in terms of size that defies easy classification. Yet that continuum arguably contains within it sites that had a multiplicity of purposes, that were conceived differently, and therefore some kind of classificatory scheme is needed. It seems unreasonable, albeit possible, to suggest that an 82 m^2 regularly oval coastal lowland site like Cnoc Sabhail is the same in conception as an irregular highland 3400 m^2 multivallate enclosure such as Ranachan Hill. The problems with the simple dun/fort classificatory scheme have been well documented, but treating all sites as one mass is equally unsatisfactory – while a useful starting point for analysis it offers no insight into the archaeological record. Gilmour's date scheme for Argyll focusing on site morphology and architecture is useful in that it allows us to subdivide all enclosed sites by something other than area, for which there have traditionally been no suitable divisions. However Gilmour's classifications do not specifically address what sites may have been used for (nor does it appear they were ever intended to) – sub-rectangular and oval enclosures of the same size at similar locations in the landscape may or may not be essentially the same thing. As well as size, subjective assessment has been the only method used to classify sites in terms of type, use or potential hierarchy, and Alcock and Alcock argued that it may actually be 'more useful for classificatory purposes than simple measurements' (1987, 132). This may be true, but subjective criteria cannot be satisfactory as an over-arching system due to interpretations varying from surveyor to surveyor. Furthermore, the subjective criteria used by individual surveyors are based on something measurable, be it scale of defences, size, landscape position, or morphology. All of these things can be empirically assessed. When the measurable characteristics of the enclosed sites in southern Kintyre are analysed in this way they do not form a continuum. There are divisions, identified throughout this chapter and below, between groups of sites, and there are detectable categories in area, prominence, visibility, relationship with farming land and morphology that may relate to original site use and conception. These divisions are related to differences in internal area, and roughly correspond to the size classes (A-E) identified through the analysis of the GIS data, and retrospectively applied in this chapter.

The coastal distribution of enclosed sites in Argyll was noted by Gilmour (1994, 46; 2000a, 142), and placement of sites close to the sea is true of much of the visible later prehistoric settlement record of Kintyre. There are, however, inland sites and they are larger than coastal examples. The preference for inland locations for larger sites appears to be linked to their upland locations. Harding noted that thirty percent of forts are located higher than the highest of duns in Argyll, and all of the examples of upland forts cited are in southern Kintyre (1997, 120). Yet there is more complexity evident in the data with the ten largest forts in southern Kintyre considerably more likely to be positioned both inland (Figure 7.10 & 7.13) and on higher ground (Figure 7.16 & 7.19) than all smaller sites, many of them on the cusp of being too high for permanent settlement, as argued by both Gilmour (2000a, 144) and Harding (1997, 120). Many of the larger sites are in extremely visible locations in the wider landscape and are statistically more topographically prominent than smaller examples (Figure 7.27 & 7.50). Sites like Ranachan Hill and Knock Scalbart are geographically removed from agricultural land but they have exceptional visibility of that land over longer distances (Figures 7.70 & 7.77; 7.81 & 7.85). Arguably their location would be inconvenient and impractical as permanent habitation for the farming communities who exploited the soils of the Laggan and the slopes surrounding it – the combination of distance and steepness of the slope would make them inefficient for reasons of access, both for humans and animals. This, along with their exceptional visibility might suggest that they were used for purposes that may prioritise prominence and visibility above other criteria, perhaps defensive or ceremonial reasons. Yet if visibility and prominence were the only criteria for the positioning of these larger sites then it is perhaps surprising that there are visible, prominent unoccupied hilltops in the region that are only slightly higher, suggesting that an altitude above 215 m OD was considered unacceptable as a location (Figure 7.110 & Figure 7.47). This might imply that exposure, climatic conditions and habitability were factors in their placement. Some of the larger, more prominent sites show evidence for multiple phases of enclosure. Ranachan Hill shows evidence for re-use of the hilltop over many generations with up to three distinct phases – the outer defences may even enclose a considerably larger area than the 3400 m^2 that it has been measured as in this study. If there is potential for hierarchy in later prehistoric enclosed sites in this region it is likely to be found among this group of sites above 1300 m^2 (size D in this chapter) that share similar characteristics in their size and landscape positioning relative to other enclosed sites.

Figure 7.110: *High, prominent hills surrounding the Laggan without evident prehistoric enclosures. Taken looking west from inside the inner ramparts of Balloch Hill.*

Cnoc Araich is the only fort in Kintyre to fall above the step-change in internal area noted in Chapter 5. Apart from the size of area enclosed, and its unusual earthen rampart and ditch construction, it is unremarkable, being neither topographically prominent, nor especially visible or particularly defensible (Figure 7.21, 7.23 & 7.44). Cnoc Araich is not much larger than the outermost ramparts at Broxmouth in East Lothian and not dissimilar in construction. Yet it is different in its relative size –Broxmouth is unexceptional in terms of the area it encloses in eastern Scotland, while Cnoc Araich is by far the largest fort in Kintyre and among the largest in western Scotland. Harding (1997, 120) and Nieke (1984, 94) both refer to it as a site traditionally interpreted as a minor *oppidum* or tribal centre (by Feachem 1966, 78; RCAHMS 1971, 16) although both acknowledge the unsuitability of the term – Cnoc Araich is tiny compared to many sites considered as *oppida* in southern Britain or mainland Europe, and without definite evidence of it functioning similarly such a term is not useful. It is distinct in its landscape positioning from the large hilltop forts of Kirkcudbrightshire where all sites above the step-change in area are exceptionally prominent and visible and slightly removed from agricultural land. The highest, most prominent land in its immediate locality has not been chosen for its location – it is overlooked by Cnoc Mór less than a kilometre to the southwest. Unlike similarly-sized sites in Galloway or the much smaller hilltop forts in Kintyre north of the Laggan, Cnoc Araich seems to be positioned to be accessible, to be close to agricultural land and everyday farming activity rather than removed, and it could certainly have been inhabited permanently. Despite its size relative to the other forts of the region its location has not been chosen to dominate the landscape in the manner of sites like Burnswark in Dumfriesshire or Tap o' Noth in Aberdeenshire. It is also possible to imagine it functioning as an enclosure for livestock, which is probably not the case for most of the larger enclosed sites like Ballywilline Hill or Knock Scalbart that lie below the step-change in size in Kintyre.

The latter are distant from better grazing land and inaccessible due to steep slopes – it is difficult to imagine them being used as a livestock pen except in times of emergency, when danger may have outweighed convenience. It is slightly apart from the main locus for later prehistoric settlement in Kintyre, in that it is at Southend, rather than near modern day Campbeltown. Its function remains unknown, and, given the area enclosed compared to other sites, understanding of the site is fundamental to any interpretation of later prehistoric societal structure in southern Kintyre.

Sites classed by the RCAHMS as duns are different from forts in many aspects of their landscape positioning – notably they tend to be less topographically prominent and have poorer visibility to and from them over longer distances (Figure 7.26 & 7.49; Table 7.1). The distinction between the smallest enclosed sites (labelled by the Commission as duns) and those that are slightly larger (seen as forts) does not appear to be at the arbitrary 375 m^2 size defined in the Kintyre Inventory, however. While not obviously distinct in general visibility or topographic prominence, sites under abut 250 m^2 are more likely to be positioned close to and with good visibility of favourable farming land than sites slightly larger than this (Figures 7.72; Table 7.2). Harding (1984, 218-9; 1997, 122-125; 2004a, 130-131) has divided duns into those that could have been roofed and those that could not, with many of the smaller, more circular, examples belonging in the Atlantic roundhouse series identified by Armit (1990; 1992; 1996). Alcock and Alcock (1987, 133-134) have also argued that oval duns of a small enough size could also be roofed. This is a significant distinction as it differentiates between monuments that functioned as standing buildings and those that may be lines of defences encircling one or more other structures. The former may function as a house for people or animals to live in, with the walls helping to support the roof as well as providing shelter and privacy to those in the interior, the latter an enclosure demarcating or restricting access to an area. For Gilmour (2000a, 118), roofability should not be a primary way of categorising sites, as it does imply an understanding of their function, and should only be a final tier in any classificatory system. There is, however a probable division between smaller and larger sites classed as duns (sizes A and B) in their relationship with agricultural land and this may be related in some way to smaller sites functioning as farmhouses and slightly larger sites as defensive enclosures. This dividing line does occur at a slightly larger size than the 177 m^2 limit for roofability defined by Harding (1984), but is arguably close enough to be related to it.

Applying Gilmour's date shape categories to the smaller sites in southern Kintyre (i.e. those around 500 m^2 and under) there is little obvious patterning in the landscape positions of oval and circular enclosed sites, but the miscellaneous class of all non-regularly curvilinear sites holds together as a grouping very well. These sites are likely to be positioned in places that are not at all prominent, low-lying and close to the sea with poor visibility to and from land (Figure 7.11, 7.17, 7.30, 7.35, 7.46 & 7.56). This grouping includes stack sites like Dun Fhinn or Port a'Chaisteil, rectilinear promontory structures like Ugadale Point and other sites that are not regularly oval or circular like Kildonan Bay. Excavated evidence from Dun Fhinn and Kildonan Bay, along with similar sites elsewhere in Argyll like Dun an Fheurain in Lorn, has formed the basis for the traditionally advanced 1st millennium AD dating of duns, yet the sites that have been convincingly dated to this period form a morphological grouping distinct from other sites classed as duns, as noted by Gilmour (2000a, 124-125, 137) and Henderson and Gilmour (2011, 92-99). It is likely to be significant that this group of sites is also distinct from other sites of similar size in terms of their landscape position – their coastal positioning may indicate a more seaward focus for settlement in the 1st millennium AD, with less priority given to visibility of the landscape.

What of the sites that fall between 250 m^2 and 1300 m^2, that do not share the combination of small area enclosed and proximity to agricultural land of the size A sites or the large internal area, prominence and visibility of the size D enclosures? Towards the upper end of this grouping in terms of size are sites classed as forts that are likely to be coastally located, that are not as prominent either locally or in the wider landscape as the larger enclosures and that are positioned in areas of land that have agricultural value (Figure 7.10, 7.25, 7.29, 7.34 & 7.70). The sites at Killocraw and Westport are good examples, the former a small, slight fort on a promontory, the latter a larger example with some evidence for multivallation. Also falling into this size range, and illustrative of how these sites do not form an easy grouping, is Balloch Hill, which is not coastal and is very visible in the wider landscape. Peltenburg's excavations of the fort indicated one phase of enclosure (although arguably none of the dates obtained reliably date the ramparts), with Neolithic and Bronze Age occupation evidence, and later unenclosed settlement definitely post-dating the ramparts (1982, 195-206). While the largely domestic assemblage has been described by the excavator as 'impoverished' (1982, 204), there is evidence for iron and copper or bronze working at the site, suggesting activity that may not be purely at a domestic subsistence level (Ibid, 192-195). While Balloch is very visible, even over longer distances, it is not on the highest hilltop in its vicinity and is located very close to and with great visibility of agricultural land locally, and thus does not fit exactly within the observable patterns of larger, size D sites. It seems possible that most other sites falling into the size C size range may be similar in function to Balloch – with their high visibility of farming land over shorter distances it is plausible they may be locally defensible agricultural settlements.

Sites between about 250 m^2 and 550 m^2 are few in number. They are much more likely to be located further away from favourable agricultural land than sites larger or smaller than this size range (Figure 7.71; Table 7.2) but do not form any definable grouping with regard to their prominence or general visibility. Among these are sites that straddle the RCAHMS defined gap between forts and duns, including examples that might be considered by Harding to be dun-enclosures. If it is considered that those sites that are not close to better agricultural land – the likely centre of settlement and everyday activity – are 'marginal' to society, then many of these sites may be marginal. Notably this grouping (size B) is also more isolated from other enclosed sites (Table 7.7). This is perhaps significant because without these sites there would be no perception of a continuum of size from small to large in terms of site area, and the remainder of enclosed sites could be more easily categorised into small and large. Examples like Dunan, Putechantuy and Rubha nan Sgarbh may be refuges, seasonally occupied locally defensible enclosures related to pastoral farming in some way or sites concerned with coastal subsistence. Apart from the distance from farming land of many examples in this size range there are few characteristics that these sites all share. Exceptionally remote or morphologically complex examples like Sron Uamha may also conceivably be ritual in nature. Sron Uamha is isolated from most later prehistoric settlement archaeology at the Mull of Kintyre, with multivallate defences and spectacular seaward views. Perhaps is it linked instead to nearby post-medieval agricultural and domestic activity.

Like much of Western Scotland, in southern Kintyre there is one relatively large enclosed site and a multitude of smaller fortified enclosures. This may imply that the later prehistoric social structure was hierarchical, with Cnoc Araich functioning as Hawkes might have envisaged a hillfort to do – a centre for elites (Hawkes 1931). Without excavated evidence from that site or without any chronological data there is, however, no reason beyond its size to suppose that it was high status or that it was in use for any more than a short period of the first millennia BC or AD. Excavations at large hillforts elsewhere in Scotland have suggested that many sites were rarely in use for more than three to four centuries, e.g. Traprain Law (Hill 1982) or Burnswark (Jobey 1978). Thus, it is important to remember that, even if Cnoc Araich was a *capitus*, it is likely that a social structure independent of it existed for a significant part of later prehistory.

As archaeologists we are only seeing a fraction of the original prehistoric settlement record from Kintyre, with probable prehistoric enclosures only recently identified by RCAHMS aerial survey on the likely heavily populated farmland of the Laggan representing only a small part of the missing sites. It is reasonable to suggest that we have found only a tiny percentage of enclosed or unenclosed sites in the area that may have been constructed from more perishable materials. Sites identified as cropmarks on low lying ground, amongst the farming land, may represent the day-to-day domestic structures of those that used the hilltop forts or Cnoc Araich for occasional communal activity or community defence. Equally they may provide evidence for the settlement sites of a different political tier. Bearing this in mind there are several types of social structure that may be posited for what is known of the settlement record of southern Kintyre – a hierarchical model based on a king or elites, a heterarchical system centred on the slightly larger, more prominent forts with hierarchy evident within and between family groupings, or a segmentary society based on local community groupings or clusters of households. A fourth possibility, completely independent egalitarian isolated homesteads, does not fit with the visible evidence for this region – sites are intervisible, close enough to communicate and to rely on the same agricultural land and landscape resources, and there is some probable hierarchy evident in the size and position of sites. Access to agricultural land was probably key to social organisation, to power and control in the landscape. As J.D. Hill (2011, 253-4) has argued, British Iron Age communities probably had a 'political economy' based on agricultural production that likely sought not just to subsist but to generate a surplus of some kind. Some households may have been more or less productive based on size of holding or access to the best land, and the way in which use of the most favourable land was organised was likely to be fundamental to social structures. Pastoral farming is likely to have been important to later prehistoric communities in southern Kintyre also, and access to grazing land and the degree to which these resources were held communally was important. Seasonal exploitation of more marginal land including the uplands may have occurred far from communities' central home settlements – the group of enclosed sites of dun-enclosure size and slightly larger may represent temporary bases for transient communities.

How many hillforts are there in western Scotland?

Comparing aspects of the size, morphology and landscape position of later prehistoric enclosed sites in Kintyre, Skye and the Stewartry of Kirkcudbright

Simon Wood

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PhD Archaeology

University of Edinburgh

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8. Skye

8.1 Introduction

Skye is the largest and most northerly island in the Inner Hebrides. It is roughly 77 km from the tip of the Trotternish peninsula in the north to Sleat in the south and a maximum width of approximately 40 km from east to west. It is an island of peninsulas divided by sea lochs where no area of land is more than seven or eight kilometres from the sea. The northern part of the island has been chosen for this case study, as shown in Figure 8.1. This region, of roughly 1058 km^2, has been selected as within it is contained the greatest density and variety of probable later prehistoric enclosed sites in Skye, including almost all the larger enclosures classed by the RCAHMS as forts. Similarly, the majority of complex Atlantic roundhouses, traditionally defined as brochs, on Skye are located in the north of the island. It is of potential interest that the north of Skye is one of the few regions in Scotland where significant numbers of sites classed as brochs and forts coexist, and it may be of significance that a large proportion of complex Atlantic Roundhouses have outworks on Skye, surrounding knolls and following the natural terrain in a similar way to the defences of forts. Northern Skye is thus one of a limited number of places in Atlantic Scotland where the locations of hilltop enclosures, of a size that they may be considered small hillforts, can be analysed alongside complex Atlantic Roundhouses and their associated outer boundaries.

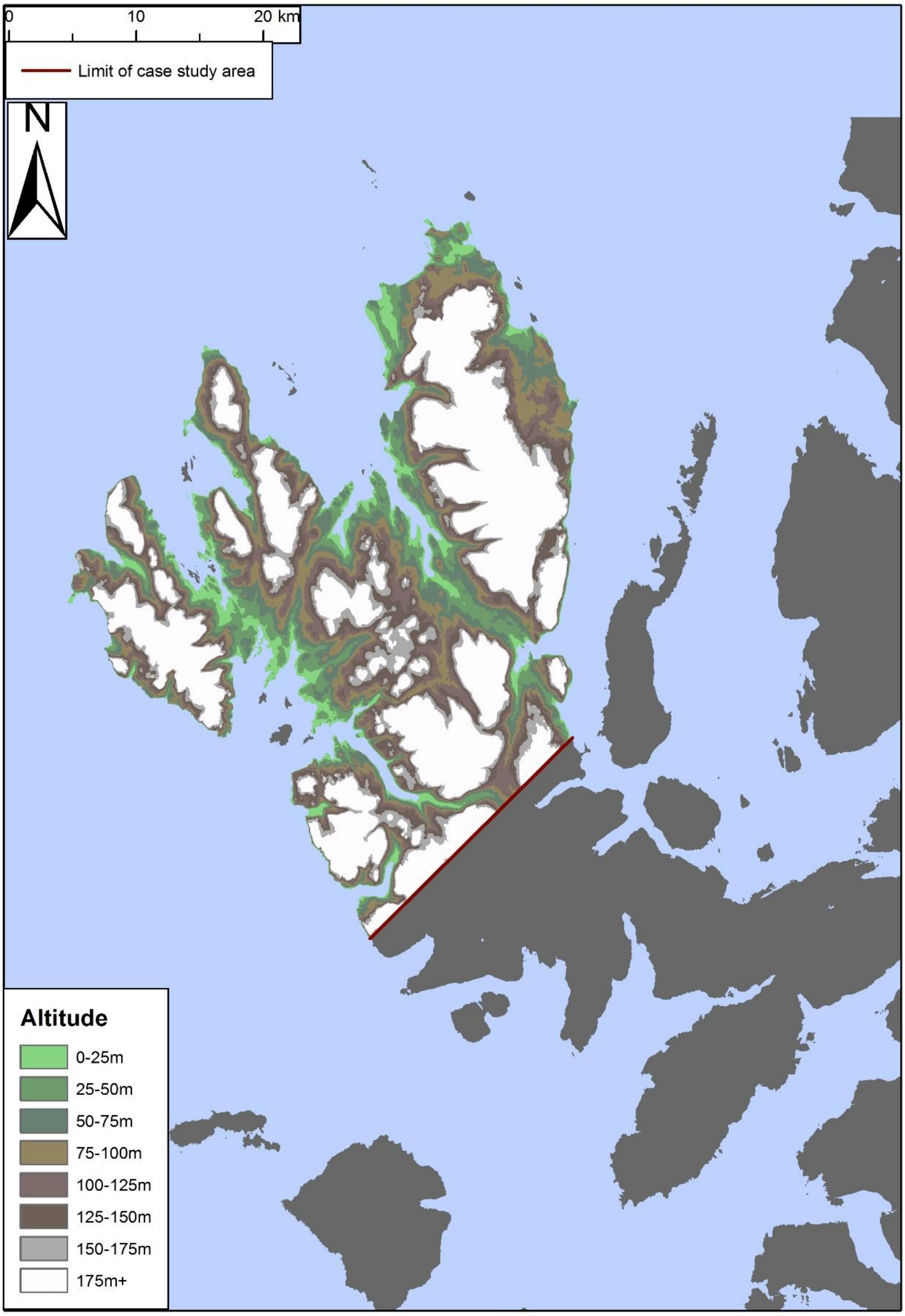

Figure 8.1: *Extent of case study area and topography.*

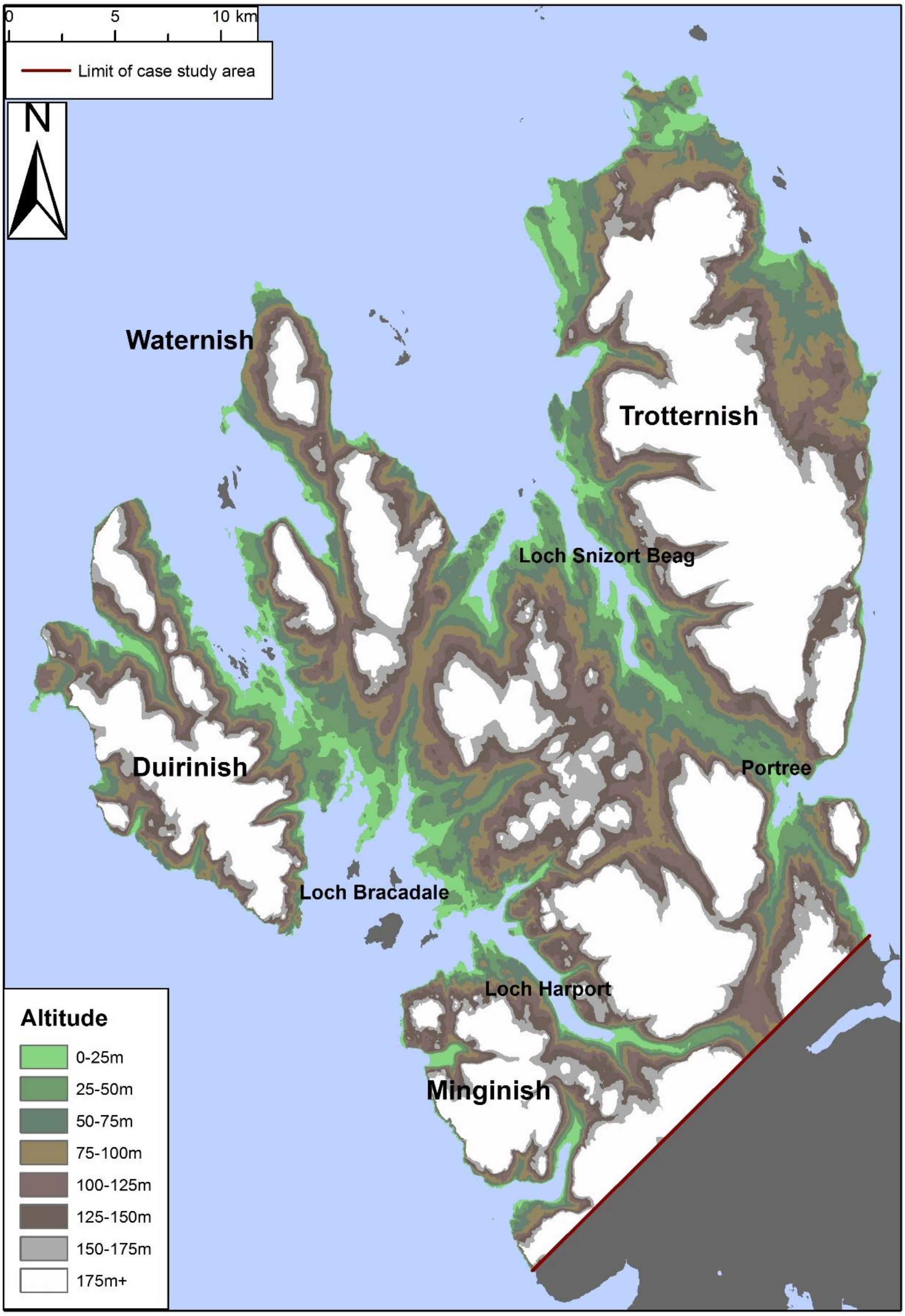

Figure 8.2: *Case study area, topography and places mentioned in text.*

8.1.1 Geology, soils and vegetation.

The case study area comprises four peninsulas, Trotternish, Duirinish, Minginish and Waternish along with a central region lying between Portree on the east coast and Bracadale to the west (Figure 8.2). The interior of most of northern Skye (and indeed the island in its entirety) is high ground, with basalt, created by volcanic activity roughly 60 million years ago, the predominant geology (Figure 8.3). The Trotternish peninsula is bisected for much of its length by a massive east-facing escarpment which rises to as high as 723 m at The Storr, with lower ground along its north east, north and west coasts. Waternish and Duirinish are more low-lying, with little ground over 300 m, but both upland areas largely consist of flat-topped basalt hills. Much of the western coastline of Skye falls precipitously to the sea with sheer cliffs such as at Waterstein Head up to 300 m in height. Throughout northern Skye, U-shaped glacial valleys were formed from mass ice movement in the Quaternary period, and these sheltered valleys have since become the focus for human settlement, partly due to their fertility, with boulder clays and gravels left behind by the ice sheets. The distribution of fertile brown soils today is restricted to parts of these valleys and some coastal areas, the volcanic soils of the highland interior having been subject to considerable deterioration, and mostly now comprise peaty gleys and blanket peat (Figure 8.4).

Skye is largely treeless today, with the exception of a few pockets of birch in the south and east of the island. It is likely that significant forested areas, specifically pine, birch and hazel, existed up to at least the Neolithic period, although it is believed that closed woodland was not widespread (Birks 1973, 173-6). Tree stumps have been found buried by peat, with the largest concentrations mirroring the present-day distributions of trees in the south, and it seems likely that the north – the area of this case study – was always relatively open. The reduction in woodland cover has been attributed to two major factors; the coolness and wetness of the climate from about 3500BC onwards leading to poorly drained soils and the formation of blanket peat, and human activity, either through deliberate felling or burning and grazing activities (Birks 1973, 174; Birks & Williams 1983; Tipping 1994; Armit 1996, 23-27).

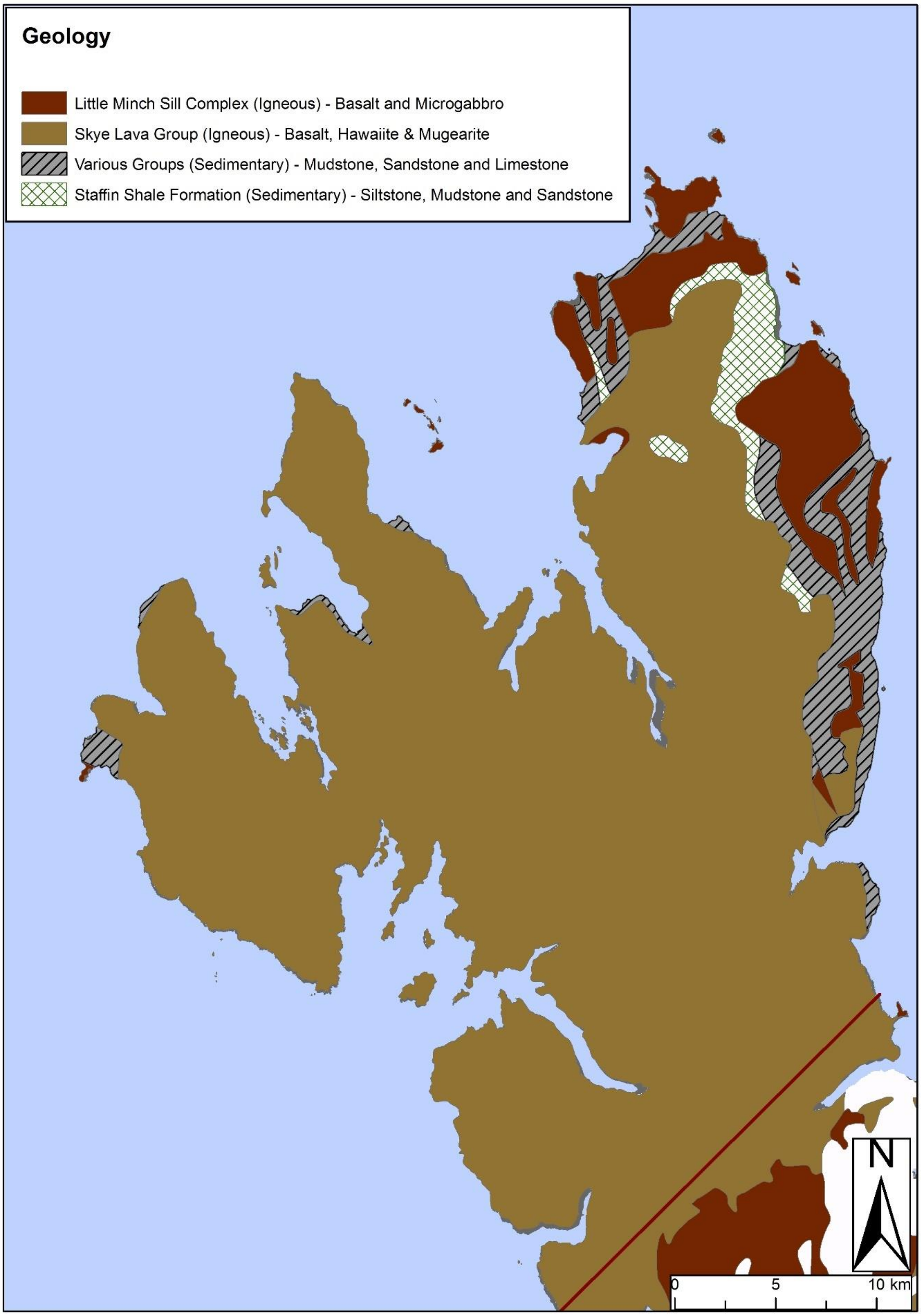

***Figure 8.3**: Geology (Data from British Geological Survey ©NERC. All rights Reserved)*

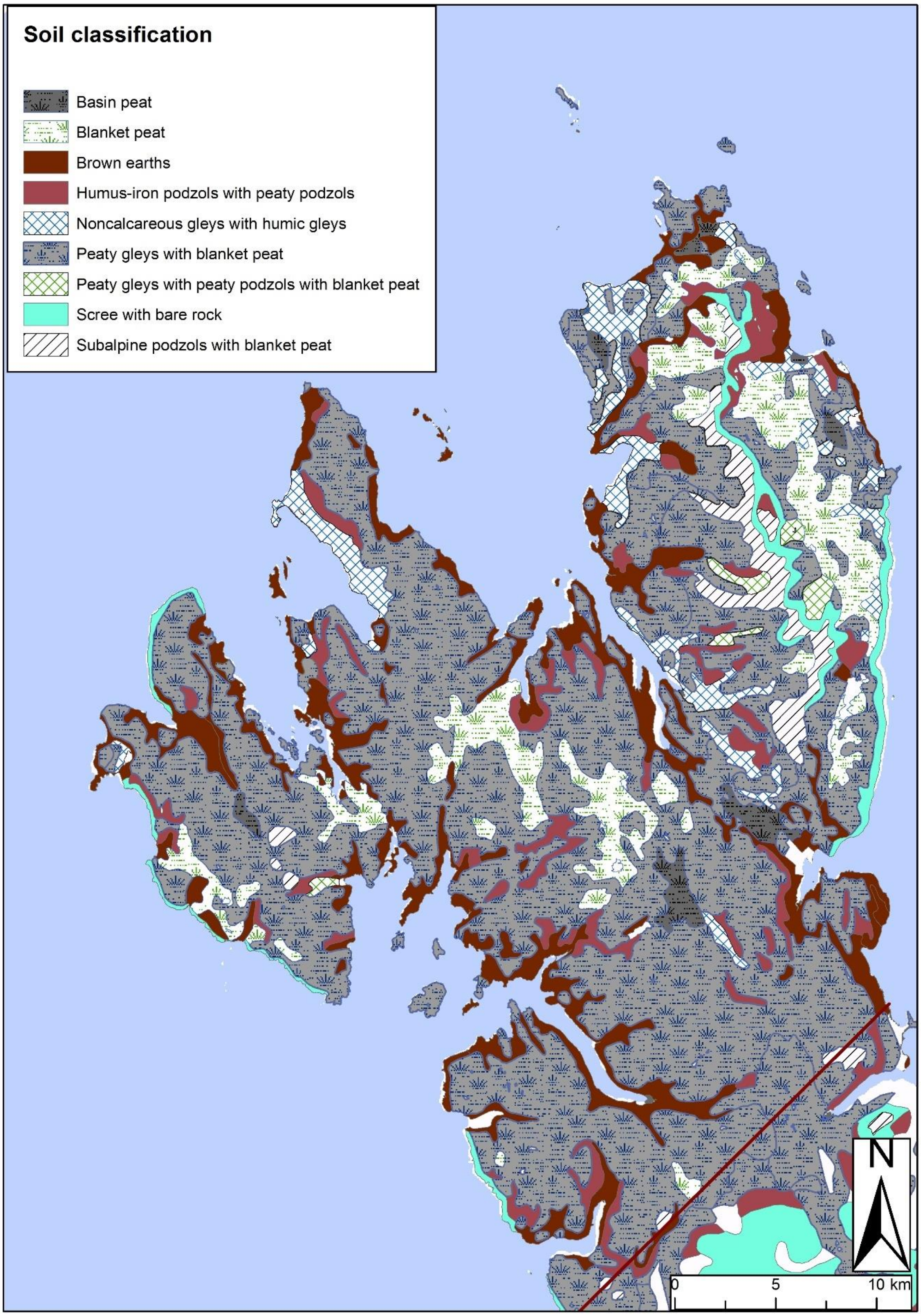

***Figure 8.4**: Soil classification (Data from Soil Survey of Scotland Staff. (1981). Soil maps of Scotland at a scale of 1:250 000. Macaulay Institute for Soil Research, Aberdeen)*

8.1.2 Archaeological background

The RCAHMS Canmore ID number of each site has been used in italics for identification of enclosed sites throughout this section.

Human occupation of Skye is evident from the early Mesolithic period, with bone tools from the earliest layers of the multi-period rock shelter site of An Corran *(11349)* on the Trotternish peninsula radiocarbon dated to the seventh millennium cal BC, found in association with a significant lithic assemblage (Saville et al 2012). No evidence of permanent domestic settlement from the Neolithic period has been found on Skye, but the earliest farming communities have left their mark on the landscape in the form of ritual monuments and megaliths, although their number and density is considerably lower than in parts of the Outer Hebrides, such as North Uist (Armit 1996, Figure 4.1).

Hut circles, which may be Bronze Age in date are widespread throughout the island, although the only excavated example in Skye, at Coile a Ghasgain *(84707)* near Sleat, has produced a solitary radiocarbon date of around 470calBC, tentatively dating this site to the earlier Iron Age (Wilgoose et al 1993). No Bronze Age domestic structures had been examined by excavation until recently, when two post-built roundhouses and a circular enclosure ditch were dug by CFA Archaeology at Kiltaraglen *(282720)* near Portree (Suddaby 2013). These structures are exceptional on Skye and very unusual for Atlantic Scotland in their dating and construction and are a reminder of the very partial picture of later prehistoric domestic settlement patterns that has been produced by archaeological field survey. Commercial rescue excavation has been very limited in scope on the island, and regionally in Atlantic Scotland, due to lack of major new infrastructure, and it is unlikely that such structures could ever be identified in many areas without intrusive investigation, due to the lack of visible remains on the surface. Further Bronze Age evidence from Skye comes in the form of burials in cists and chambered tombs, often associated with beaker pottery, and bronze weapons deposited in peat bogs (Armit 1996, 95-103).

Most visible among the prehistoric remains on Skye is the proliferation of drystone enclosed domestic monuments categorised as brochs, duns and forts by the RCAHMS. Of these, the larger enclosed sites classed as forts have received the least attention. Ian Armit omits these sites in his 1996 book on the archaeology of Skye and the Western Isles, while devoting large proportions of several chapters to complex Atlantic Roundhouses on Skye, and hilltop enclosures equally receive very little attention from Henderson in his exploration of shared settlement traditions in the Atlantic Iron Age (Armit 1996, Ch. 7 & 12;

Henderson 2007)). These enclosures set Skye apart in terms of its later prehistoric settlement record from the Western Isles, where there are promontory enclosures but no identified larger inland hilltop sites. Skye's forts are mostly restricted to the northern half of the island, with a similar regional distribution to brochs that may be related to the availability of the best farming land – specifically they are located on the west coast between Balmeanach and Bracadale, north of Portee, and clustered around Loch Snizort Beag and along the west and east coasts of the Trotternish peninsula (Figure 8.9). None of these sites has ever been excavated, with the exception of the architecturally complex site of Dun Liath (*11206;* Figure 8.5), located on the coast to the north west of Trotternish (Figure 8.11), which is classed as a dun, but has more in common with the larger hilltop enclosures in terms of its size (over 0.1 ha). The site was subject to limited excavation by Euan MacKie in 1964, with three small trenches targeting the walls near the main entrance and an intramural galley. It was tentatively dated to between 600 and 300BC (MacKie 2007, 834-5), although this dating appears to rest largely on associating it with sites classed by MacKie as D-shaped semibrochs, which the excavator believed were early Iron Age broch precursors – this assertion has since been very thoroughly questioned and, arguably, discredited (see Harding 2004a, 120-2; Romankiewicz 2011, 17-20). MacKie believed the function of Dun Liath was 'to serve as a refuge for a fairly large number of people' (2007, 834-5), with the absence of internal structures making permanent occupation unlikely, although he acknowledged that a lack of investigation of the interior meant that domestic buildings could have been present.

Figure 8.5: *View of galleried wall of Dun Liath, taken from the interior.*

Figure 8.6: *The ramparts and interior of Dun Mor, Struanmore.*

MacSween, in her review of drystone sites on Skye, subdivided the larger sites into ‘enclosures’ and ‘promontory enclosures’, and interpreted them as being primarily sited for defence, in contrast to the smaller sites that she defined as brochs and duns (MacSween 1985, 17-20; 31-3). For her, the larger hilltop sites like Dun Mor Struanmore (*11063;* Figure 8.6) and Dun Santavaig *(11123)* may have been communal stock enclosures to keep cattle safe in times of danger. The relationship between these enclosures and the complex Atlantic Roundhouses of Skye is of potential significance. Both hilltop forts and brochs in Scotland and Britain as a whole have been considered as high status, elite settlements by various authors (e.g. Childe 1935a; Graham 1947; Alcock & Alcock 1987; Cunliffe 2005), and it is interesting that when the two site types are found in the same place (albeit very small examples of the former), forts are not interpreted by late 20th century commentators as places of permanent domestic occupation, or even included in discussion of societal structure at all, and brochs have primacy in the archaeological discourse as the major settlement sites on the island (e.g. MacSween 1985; Armit 1996).

Complex Atlantic Roundhouses, classed by the RCAHMS as brochs, are common on Skye, and mostly located in the northern half of the island (Figure 8.12). Dun Fiadhairt *(10925)* and Dun Beag Struanmore (*11062;* Figure 8.7 & 8.8), both in western Skye, were excavated in the early decades of the 20th century by teams of workmen and only received second hand written reports. Both produced poorly stratified Iron Age and post-Iron Age assemblages, including decorated and undecorated locally-made pottery and jewellery, indicating that both sites may have been reused several times after their primary occupation, and it is unknown whether either excavation targeted or reached the primary fills diagnostic of initial habitation (Macleod 1915; Callander 1921). Subsequently an excavation was carried out at Dun Flodigarry *(11388)* in the far north of the Trotternish peninsula from which the director interpreted the site as a possible unfinished broch. Analysis of the site was carried out on the understanding that a ‘true broch’ was a coherent site type, and it is possible that the structure is complete but not the excavator’s conception of a true broch in form, being not quite regularly circular (see Chapter 3.4; Martlew 1985, 46-8). Pottery and domestic assemblages similar to the two sites discussed previously were uncovered and one radiocarbon date of 45±65BC (GU 1662), calibrated to 55AD in calendar years, put primary occupation of the site within the first century AD (Ibid, 44-6).

Figure 8.7: *The interior and defences of the complex Atlantic Roundhouse of Dun Beag, Struanmore.*

Most sites classed as complex Atlantic Roundhouses or brochs in northern Skye tend to be located on knolls (Figure 8.8), many with outworks encircling the hill. Eleven out of 21 brochs in Skye were listed as having outer enclosures by MacSween (1985, 14), while the present writer identified 15 circular (or likely originally circular in the case of Dun Ardtreck *(11064)*) sites with outer enclosures in the case study area alone out of 28 circular sites. For MacSween (1985, 13-14) and Armit (1996, 123) complex Atlantic Roundhouses are not defensively sited on Skye, an interpretation that agrees with the current consensus on siting of these sites throughout Atlantic Scotland, where elevated, rocky positions that are not always the highest ground locally are often preferred, locations that Romankiewicz (2011, 79-81) has portrayed as designed to control rather than defend land of value in their surroundings. Brochs on Skye are considered by several authors to be located close to arable or favourable grazing land, and are generally not found in association with other structures (MacSween 1985, 13-14; Armit 1996, 122). Excavations at Dun Colbost *(10833)* on the Duirinish peninsula by MacSween and Reed were designed to determine whether any external buildings could be found in the area enclosed by this broch's outwork, but no such structures were conclusively found, although stone paving, drains and a hearth were present (MacSween & Reed 1989; 1990; 1994).

Figure 8.8: *The landscape position of Dun Beag, Struanmore, on a knoll in undulating countryside.*

Completing the visible drystone prehistoric settlement record on Skye is a miscellaneous set of enclosures classed as duns by the RCAHMS (1928) and MacSween (1985) many of which do not fit within Armit's Atlantic Roundhouse group, being either too large or not regularly circular in shape (Figure 8.11). Unlike in Argyll, every enclosed site deemed of defensive character was classed as a dun in the Skye Inventory, with the terms dun and fort used interchangeably, although galleried examples, promontory forts, forts in lochs and 'seashore forts' were mentioned separately (RCAHMS 1928, XXXIII-XL). Subsequently a distinction was made between duns and the larger enclosure sites, classed as forts by Feachem (1963 and enclosures by MacSween (1985, 9-10), the difference between a dun and an enclosure for MacSween being one of roofability (cf. Harding 1984). In much of Atlantic Scotland complex Atlantic Roundhouses and the often larger and less regularly circular sites considered to be duns are mutually exclusive in their distributions, the latter centred on Argyll where there are fewer sites classed by the RCAHMS as brochs, the former concentrated in the Western and Northern Isles where there are fewer duns. Skye is an exception, somewhere that both types survive together, although they are distributed somewhat differently on the island. Sites classed by the RCAHMS as duns can be found in the north, on Trotternish and Waternish, but unlike those classed as brochs and large hilltop enclosures they are also found in the south of Skye, notably in large numbers on the Sleat peninsula and clustered around Loch Slapin. For MacSween duns on Skye are not defensively sited, and less likely than other sites to be positioned near favourable farming land, most surviving on what is rough grazing land today, with only one example on Skye (Dun Baravaig *11543*) identified by her as having evidence for relict field systems nearby (MacSween 1985, 15). Two possible duns were excavated by MacKie in the 1960s: Dun Liath, mentioned above, which is exceptionally large compared to the remainder of sites classed as duns, and Dun Ardtreck *(11064)*, a D-shaped cliff edge galleried site. Both sites were investigated as part of MacKie's exploration of 'semi-brochs', or possible precursors to brochs, as both are architecturally complex, and not regularly broch-shaped in plan (MacKie 2007, 819-828; 834-5). Dun Ardtreck, however, is considered by most authors today to be a complex Atlantic Roundhouse that has suffered partial destruction due to cliff collapse (Harding 2004, 121; Romankiewicz 2011, 19).

8.1.3 Maps

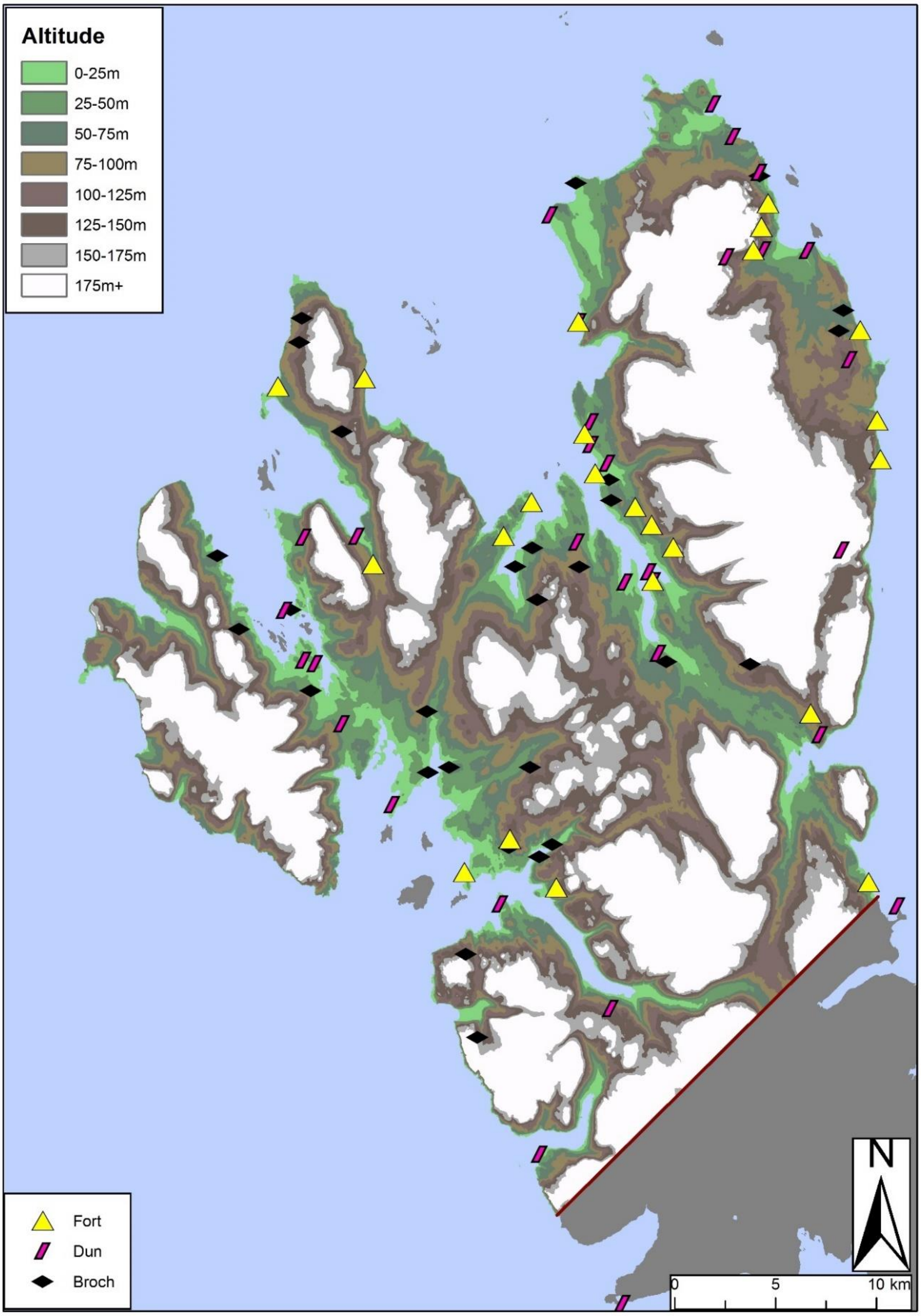

Figure 8.9*: All likely later prehistoric enclosed sites. Categorised by RCAHMS Canmore classification.*

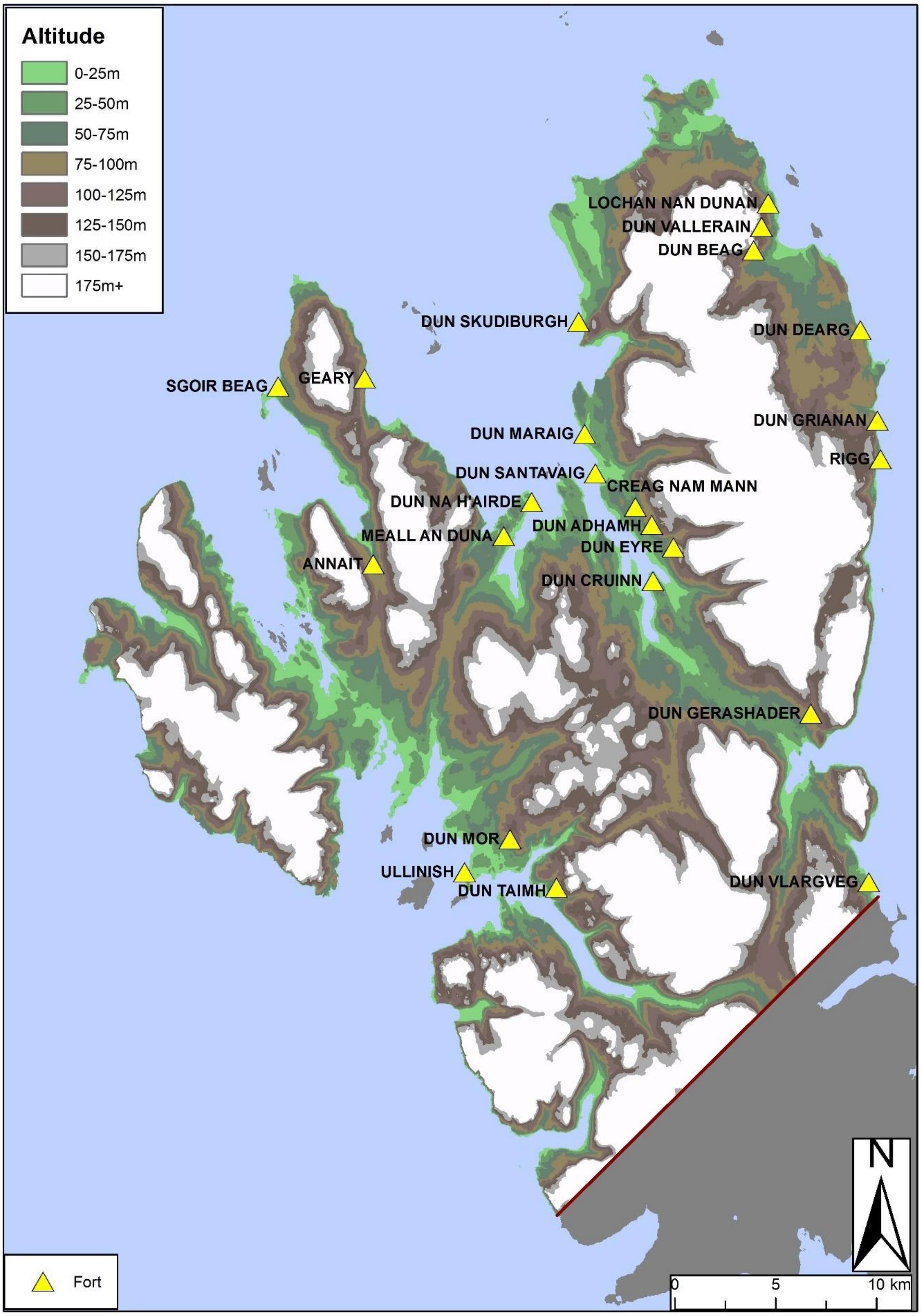

Figure 8.10: *Sites classed as forts in northern Skye.*

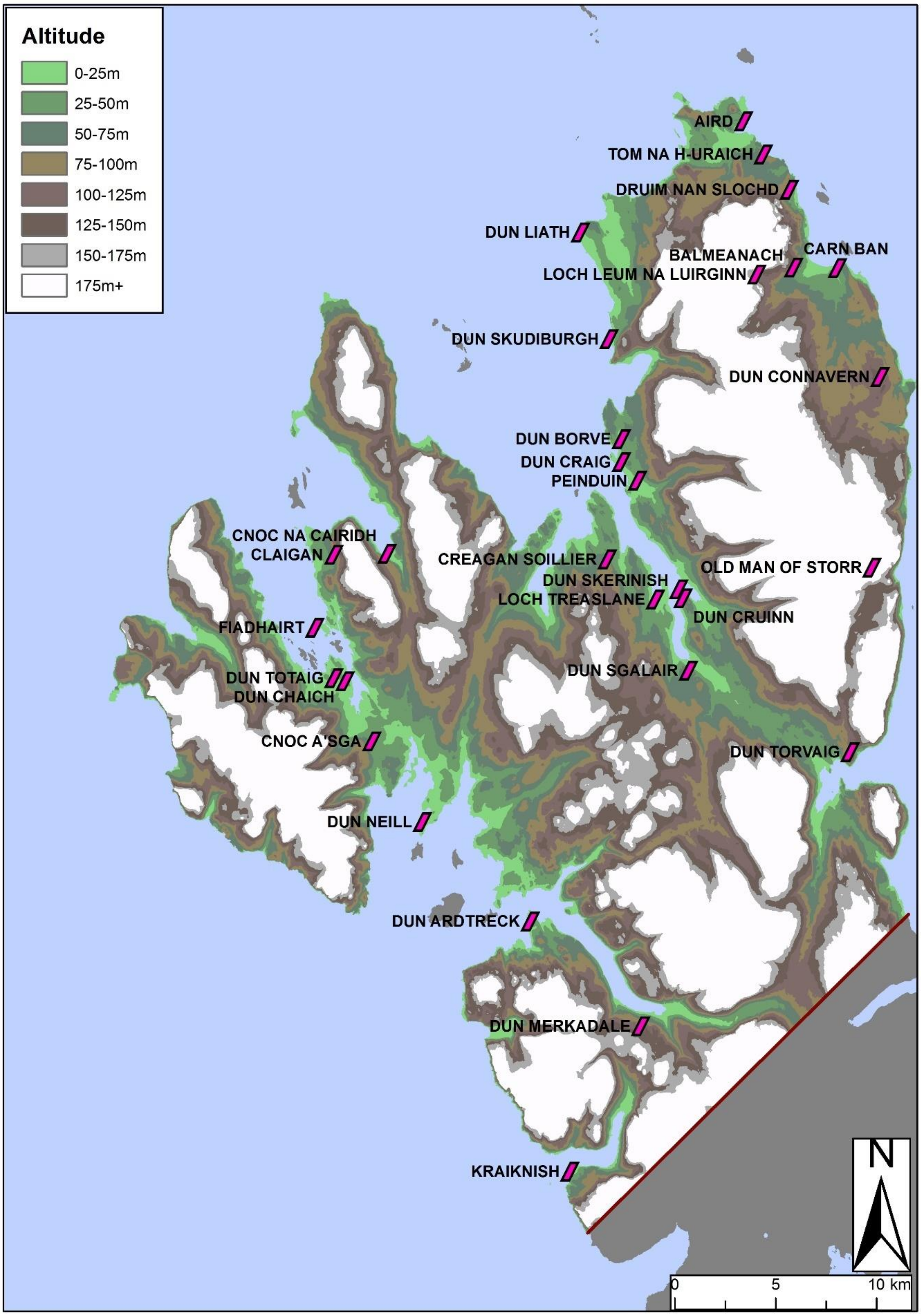

Figure 8.11: *Sites classed as duns in northern Skye.*

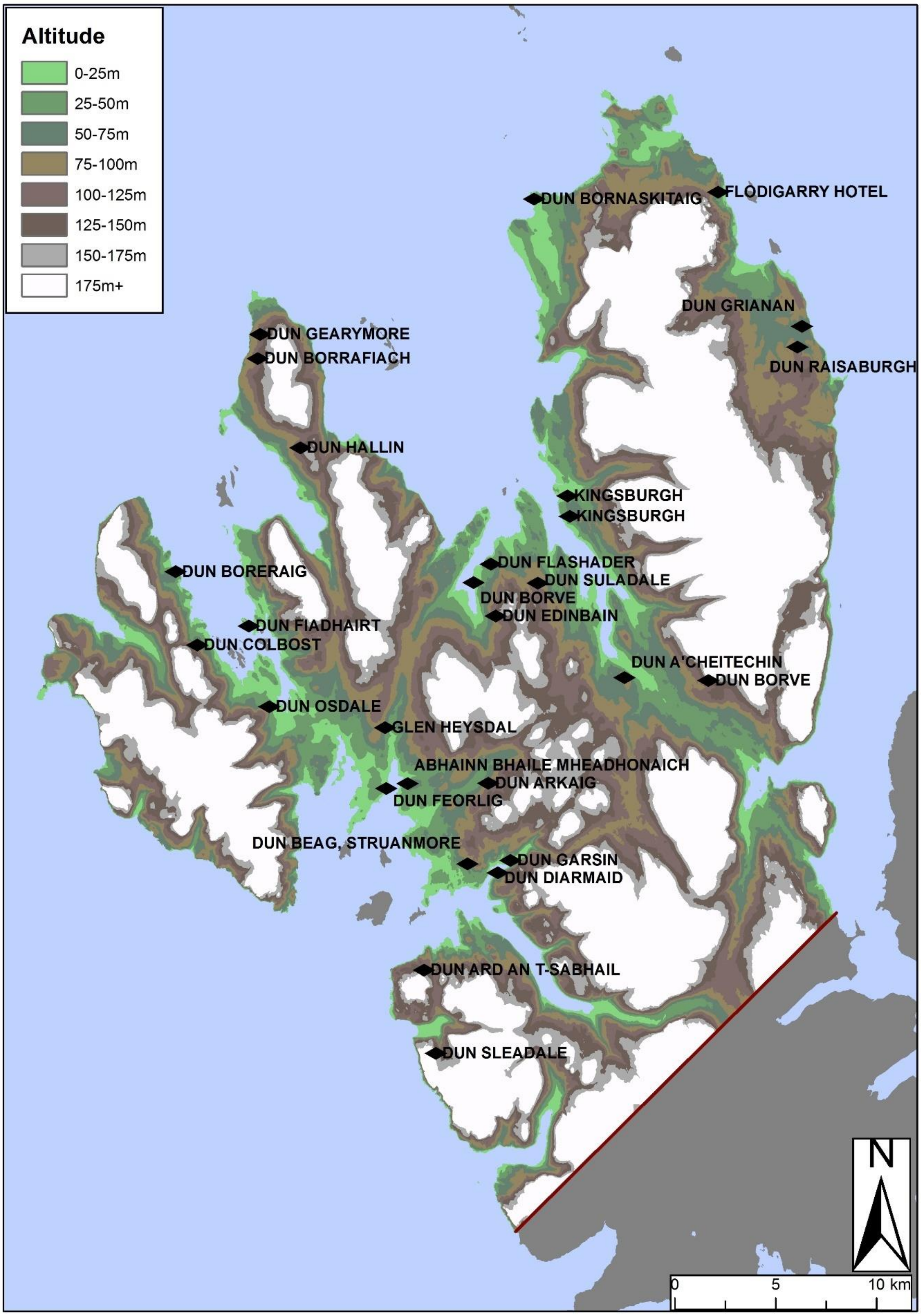

Figure 8.12: *Sites classed as brochs in northern Skye.*

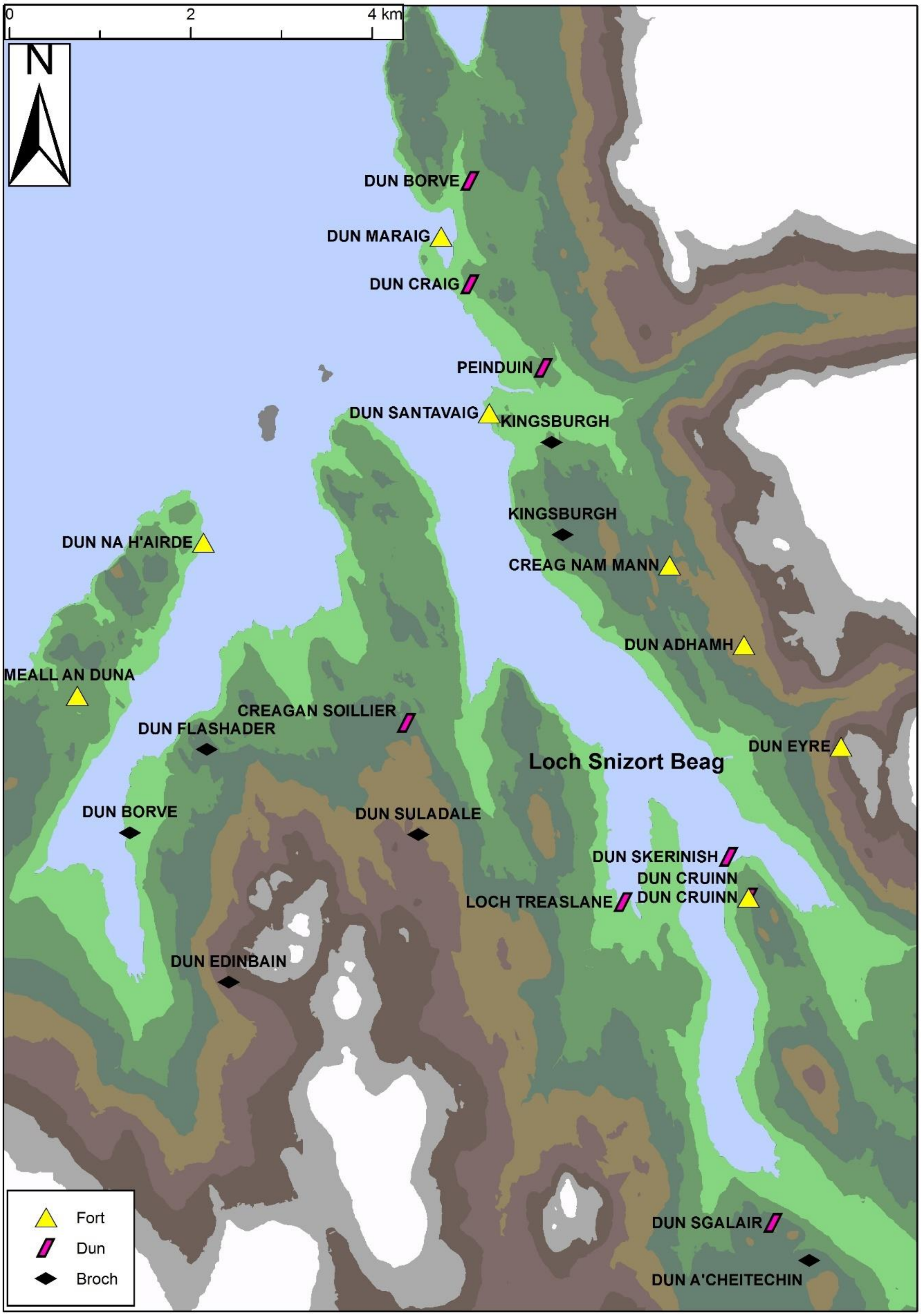

Figure 8.13: *Enclosed sites around Loch Snizort Beag.*

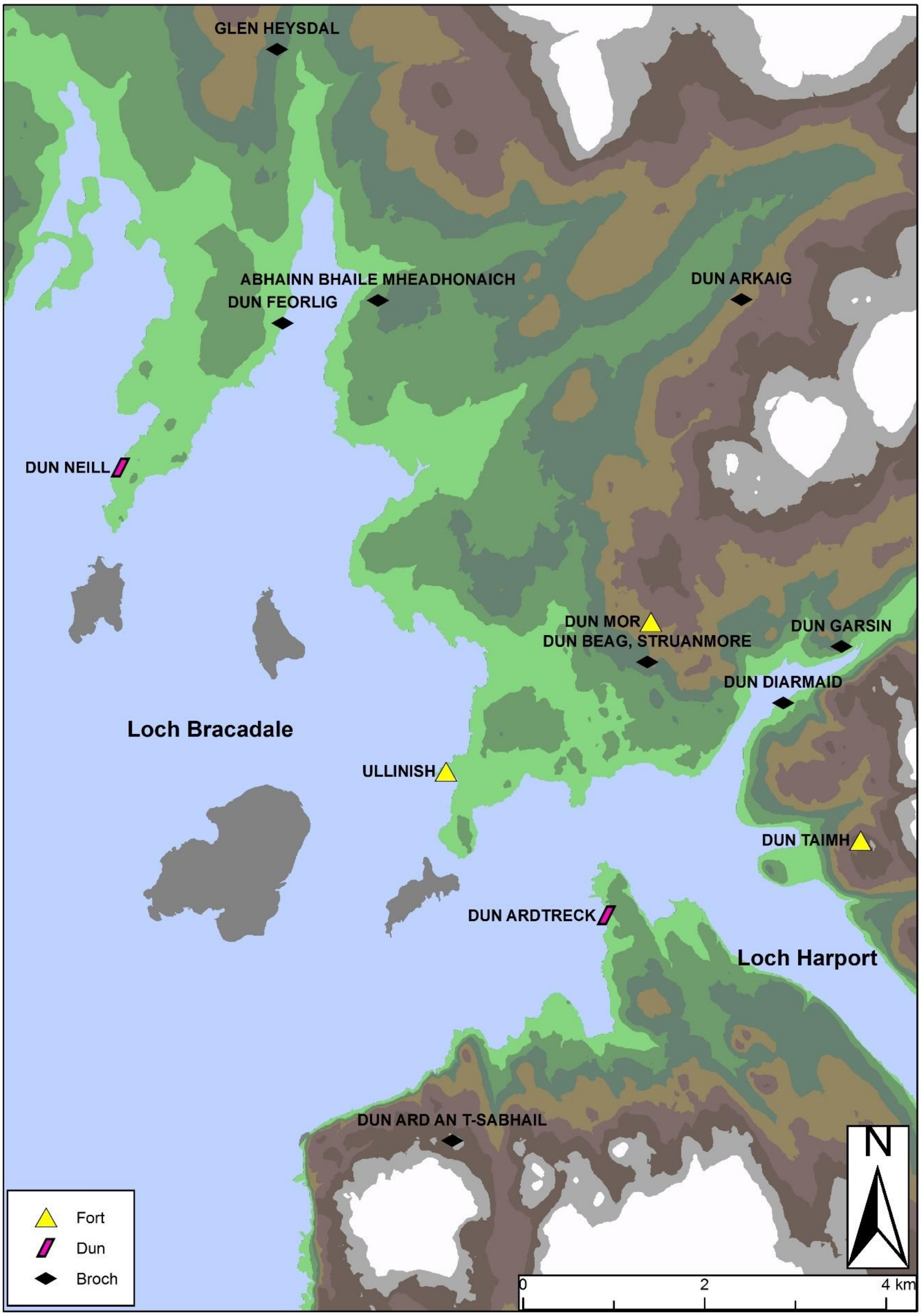

Figure 8.14: *Enclosed sites around Loch Bracadale.*

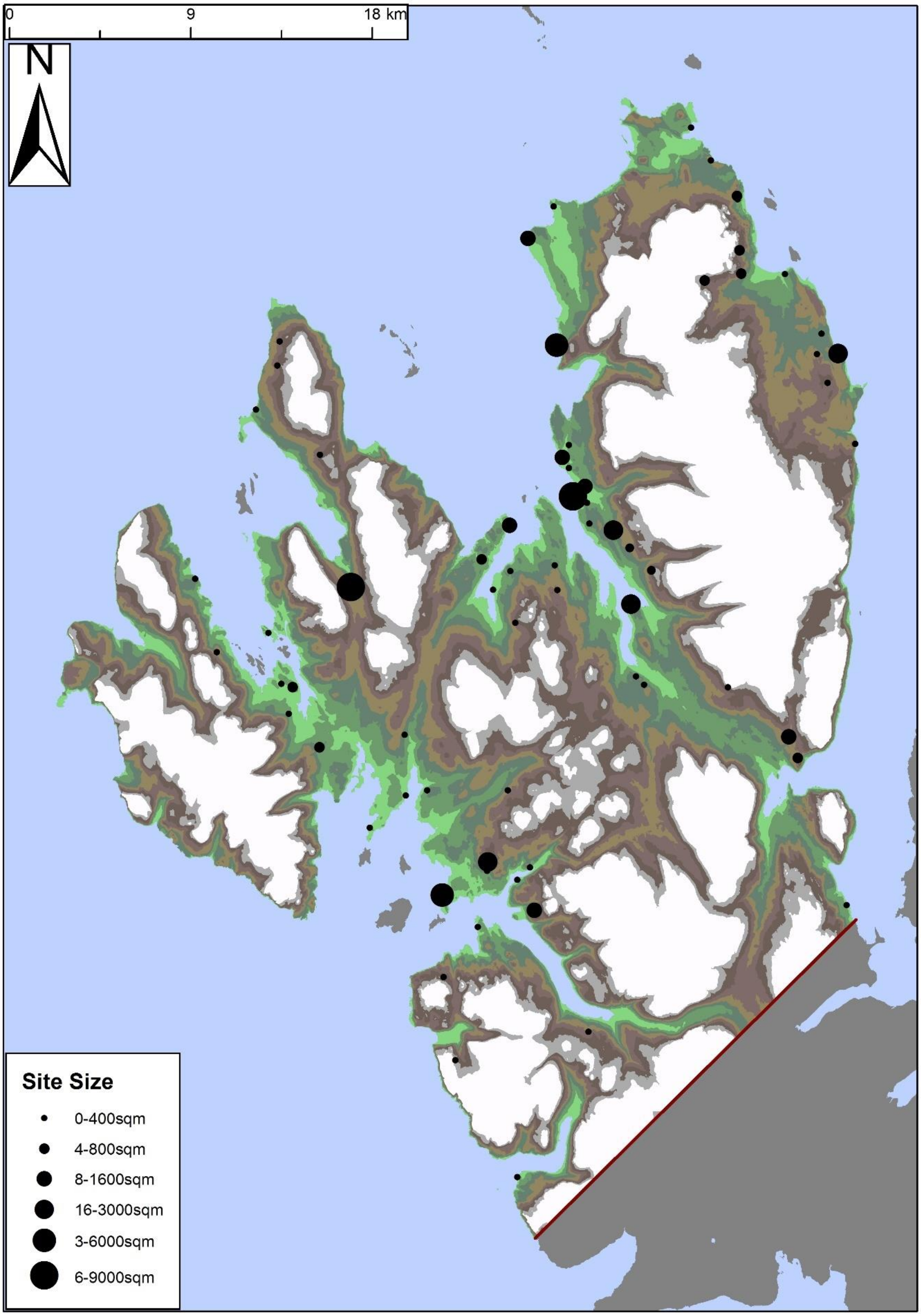

Figure 8.15: *Enclosed sites in northern Skye by size.*

8.2 GIS-based analyses

Four size ranges have been determined on analysis of the data from Skye and have retrospectively been assigned a separate label to aid in explanation. These are:

- *Size W: 0-200 m^2.*
- *Size X: 200-600 m^2.*
- *Size Y: 600-1200 m^2.*
- *Size Z: 1200 m^2 +.*

As with the Kintyre and Kirkcudbrightshire case study chapters, these size classes were created after data analysis was carried out. They do not represent arbitrary categories such as those in figure 8.15, but divisions based on observed patterns in size and landscape position.

'Complex architecture' in this chapter refers to the suite of architectural features commonly considered characteristic of complex Atlantic Roundhouses, i.e. galleries, bar holes, staircases, door checks etc.

When the term 'dun', 'broch' or 'fort' is used in this case study it refers to the current RCAHMS Canmore classification of sites. All brochs fit into the, in this writer's opinion, more satisfactory, class of complex Atlantic Roundhouses defined by Armit (1996), but so do some of the duns (e.g. Dun Ardtreck). To avoid complications associated with what sites in northern Skye are or aren't complex or simple Atlantic Roundhouses, the broch/dun division has been utilised as an interpretive device in this chapter, despite the dun classification containing a wide variety of sites (See Chapter 3.4).

8.2.1 Site distribution, distance from the sea and altitude

In the case study area most sites, regardless of classification, are located on comparatively lower-lying coastal land around bays or glacially carved sea lochs like Loch Snizort Beag (Figure 8.9). 76% of enclosed sites lie within 1 km of the coast, a considerably greater percentage than the 29% of total land in the case study area that is this close to the sea (Figure 8.16). Enclosures classed as forts appear to be located either on the coast or over 1 km from it, with very few examples falling between 50 m and 1000 m (Figure 8.17). Smaller sites, including most sites classed as duns or brochs, are quite evenly distributed between zero and 1500 m from the sea, with three inland outliers, Dun Borve, Dun Arkaig and the dun at Loch Leum na Luirginn (Figure 8.17). Statistically, sites classed as forts do not significantly differ from duns in their distance from the sea – the results of the K-S test do not indicate that either site type is generally located closer to the coast, but the graph reflects the polarisation of the larger enclosures in the fort category – they are either on the coast or over a kilometre from it, but none are more than 1.5 km inland (Figure 8.18).

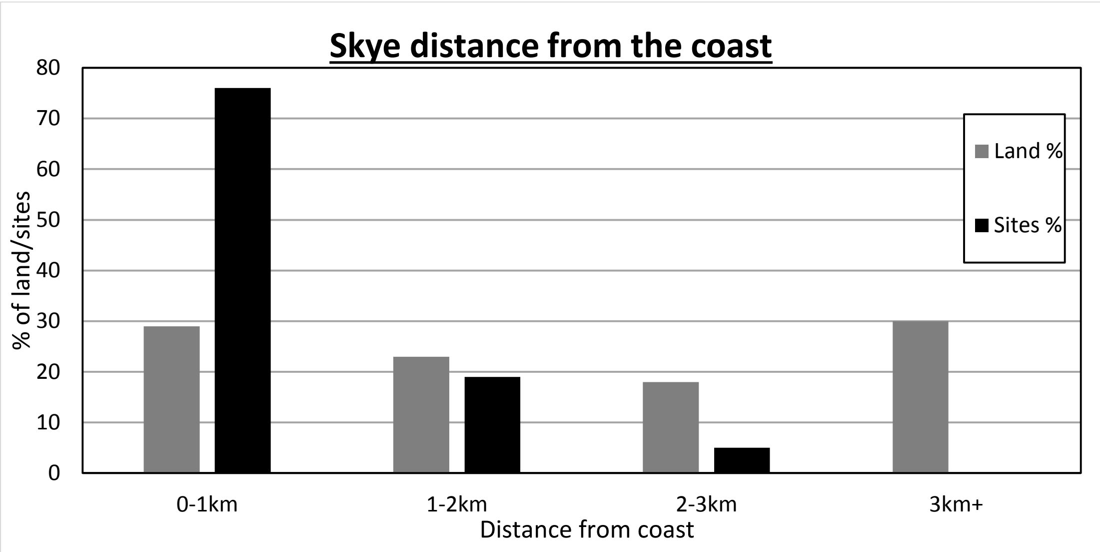

Figure 8.16: *Distance of sites from the coast. This is compared to the percentage of land falling into each distance category. Showing that there is a much larger percentage of sites than land within 1 km of the sea.*

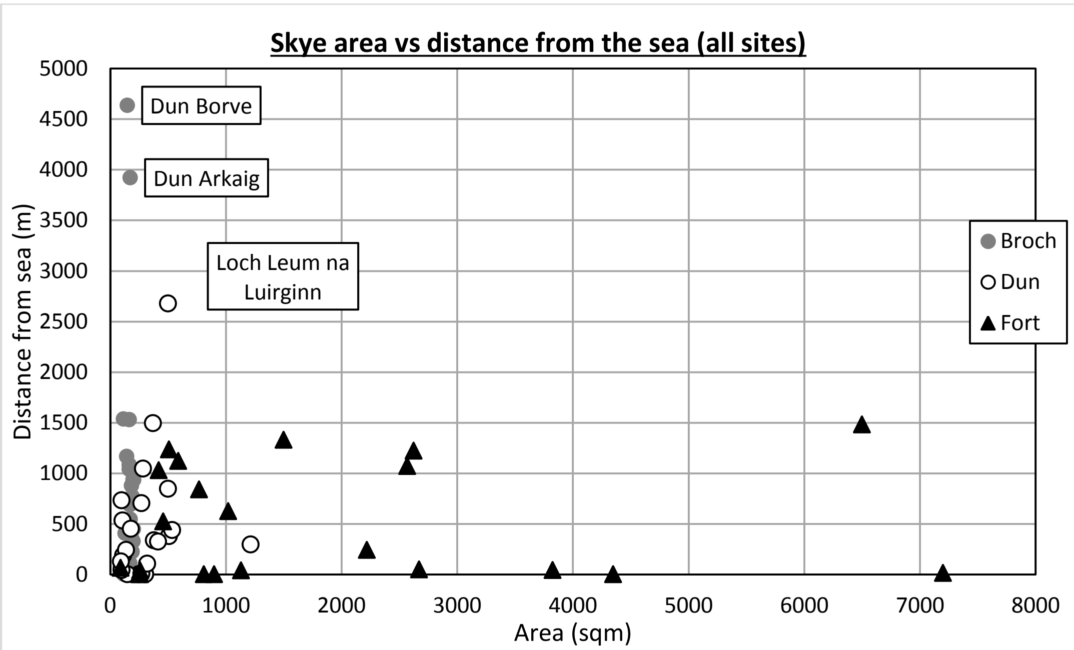

Figure 8.17: *Site area compared to distance from the coast. Showing most sites close to the coast with a few outliers.*

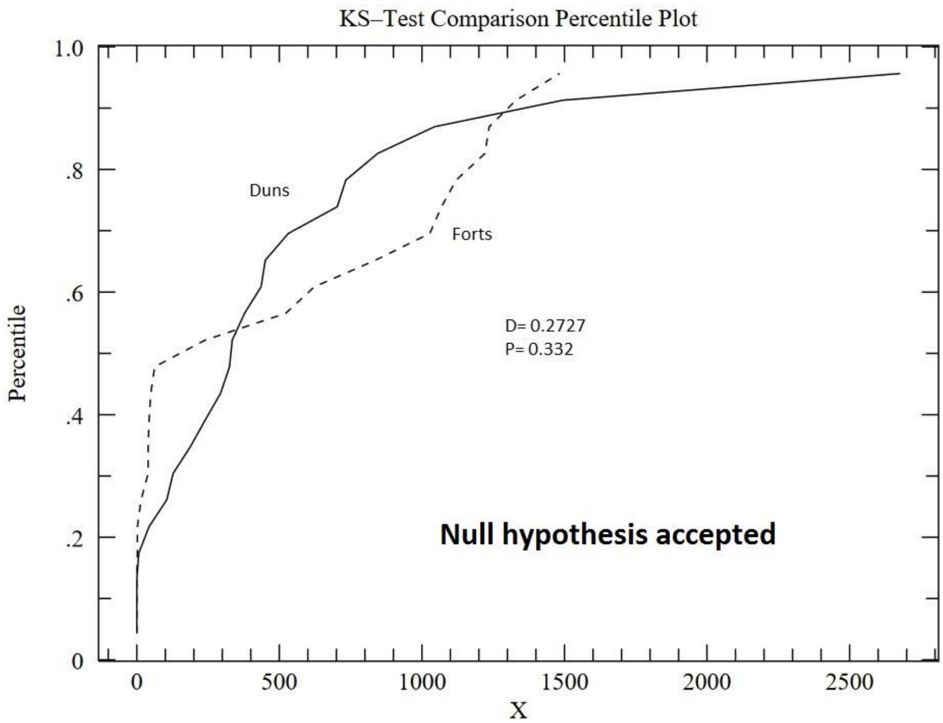

Figure 8.18: *K-S test comparing distance of duns and forts from the coast. Neither traditional site class is definitely closer to the sea, however forts are more polarised.*

No sites of any classification identified in the case study area lie above 175 m OD in altitude, with 59.5% of sites below 75 m, suggesting that there is an upper height limit considered suitable for prehistoric enclosed settlement (Figure 8.19). A possible dun adjacent to the Old Man of Storr at over 300 m has not been included in the study due to lack of detailed OS survey and the writer's inability to accurately plot the site on satellite imagery due to tree cover. Between 75 m and 175 m OD the percentage of sites corresponds quite closely to the percentage of land in each height category, while site percentage greatly exceeds land percentage in the 0-25 m and 50-75 m categories, suggesting that these altitudes may have been abnormally popular for later prehistoric enclosed settlement, or at least the survival today of such sites.

Unlike the other two case study areas, there is no clearly positive correlation between site size and absolute height with the largest sites in Skye lying on quite low-lying hills or promontories close to the sea (Figure 8.20). None of the ten largest enclosures are among the highest sites in the northern half of Skye. The smallest sites, particularly those classed as brochs are evenly distributed between 3 m and 172 m OD, with duns showing a similar pattern (Figure 8.21). Size Y sites (600-1200 m^2) tend to lie at either very high or very low altitudes. This may be because they are either coastal promontory sites (very low), or small precipitous forts (very high); this pattern could be related to a preference for low-cost defensibility among sites of a certain size, using the natural topography of promontories or high rocky knolls to their advantage. Very few size X sites are below 80 m OD, while roughly 50% of size W sites are below that height (Figure 8.21). Among sites of this latter size, those with complex architecture and outworks are likely to be positioned at greater altitude compared to those without these features (Figure 8.23). Size W sites that have outworks can be shown statistically to be positioned at a higher altitude than sites of that size without outer defences (Figure 8.24), with the two groupings conclusively drawn from different datasets. This might suggest that outworks were not an attempt to augment the defences of less defensible, lower-lying positions, and links the presence of additional defences to positions that were already prominent. Furthermore, almost every high ground site of this size is classed as a broch. If sites classed as brochs, particularly those with outworks, are the more impressive, monumental examples of size W sites then the correlation of brochs with higher altitude may represent hierarchies among size W sites.

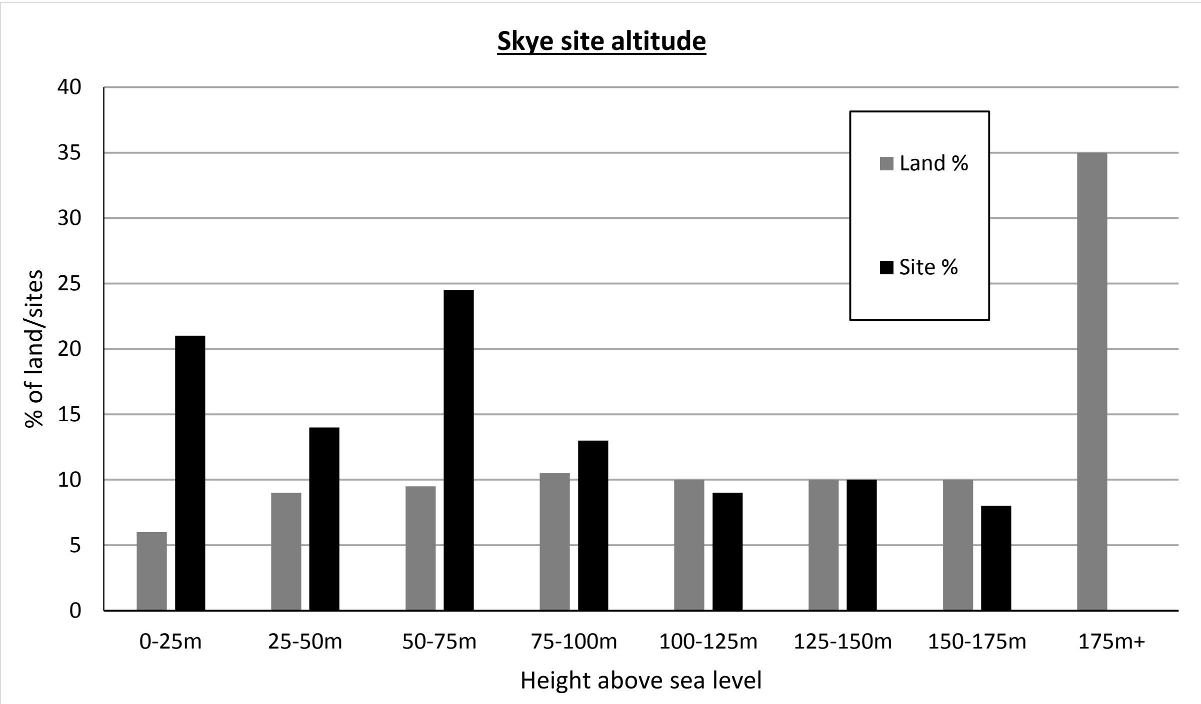

Figure 8.19: *Height of sites above sea level (m), compared to the proportion of land in the case study area falling into each height category. Showing a higher percentage of sites than land below 100 m OD, particularly below 75 m.*

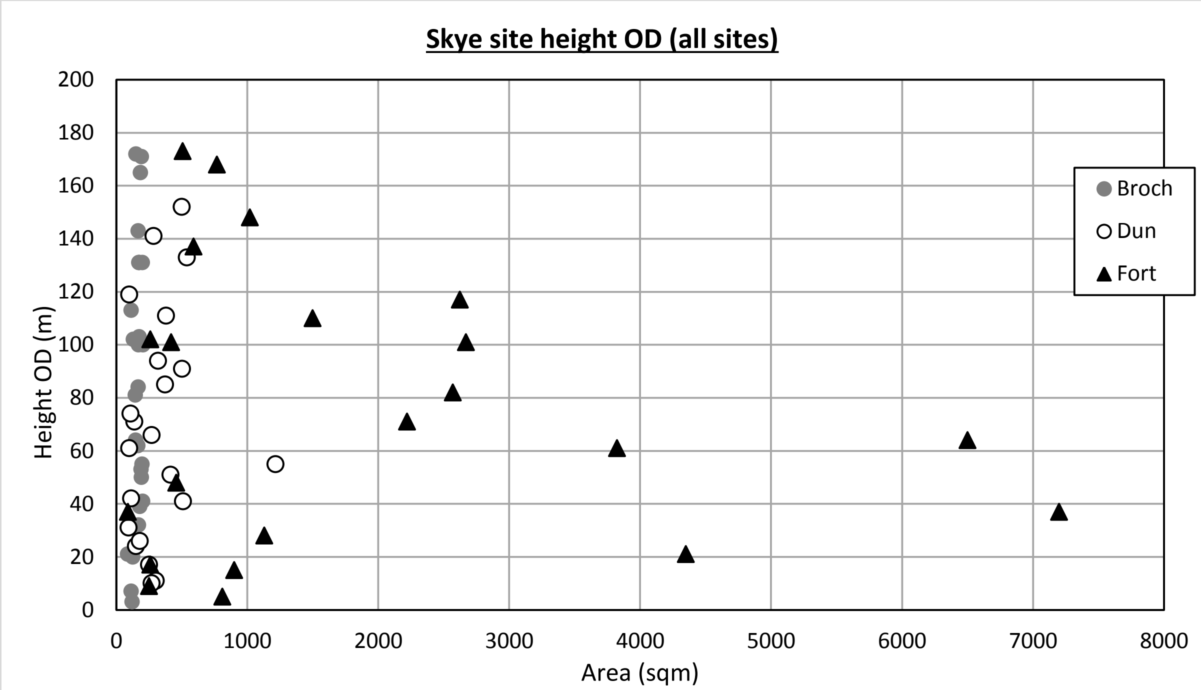

Figure 8.20: *Site area compared to height above sea level. Showing no correlation, or possibly an inverse relationship between site internal area and height.*

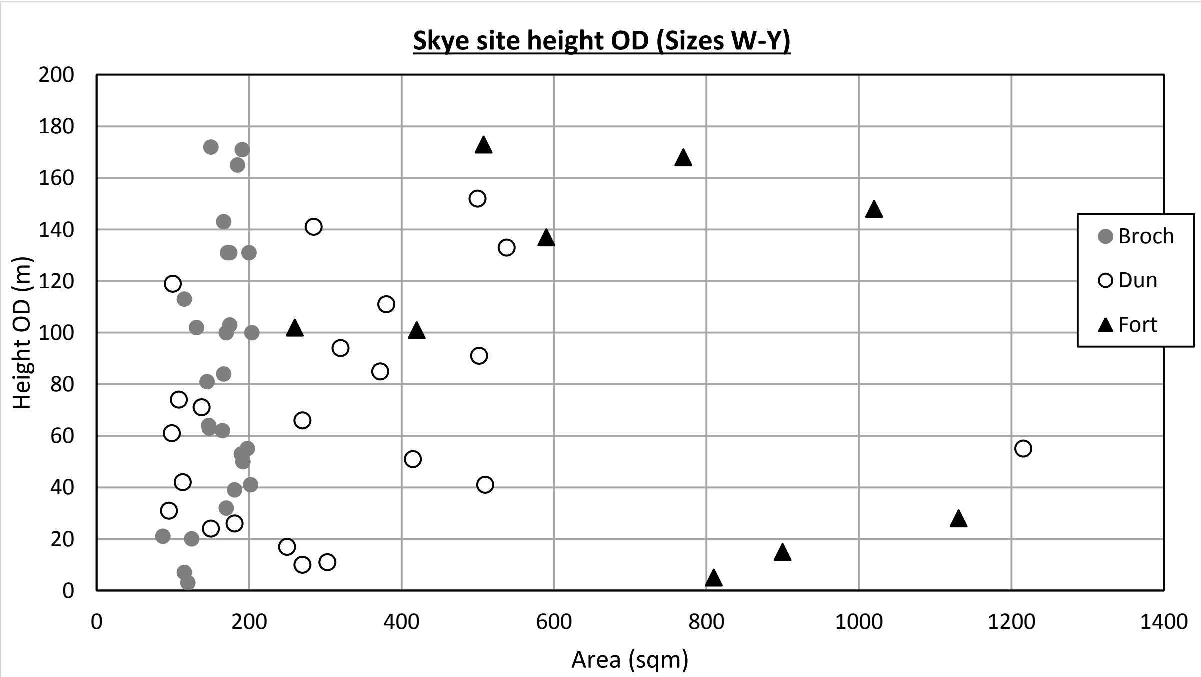

Figure 8.21: *Site area compared to height above sea level. Size W and X sites are evenly distributed. The small number of size Y sites are polarised.*

Figure 8.22: *Site area compared to height above sea level. Few morphology-related patterns are discernible.*

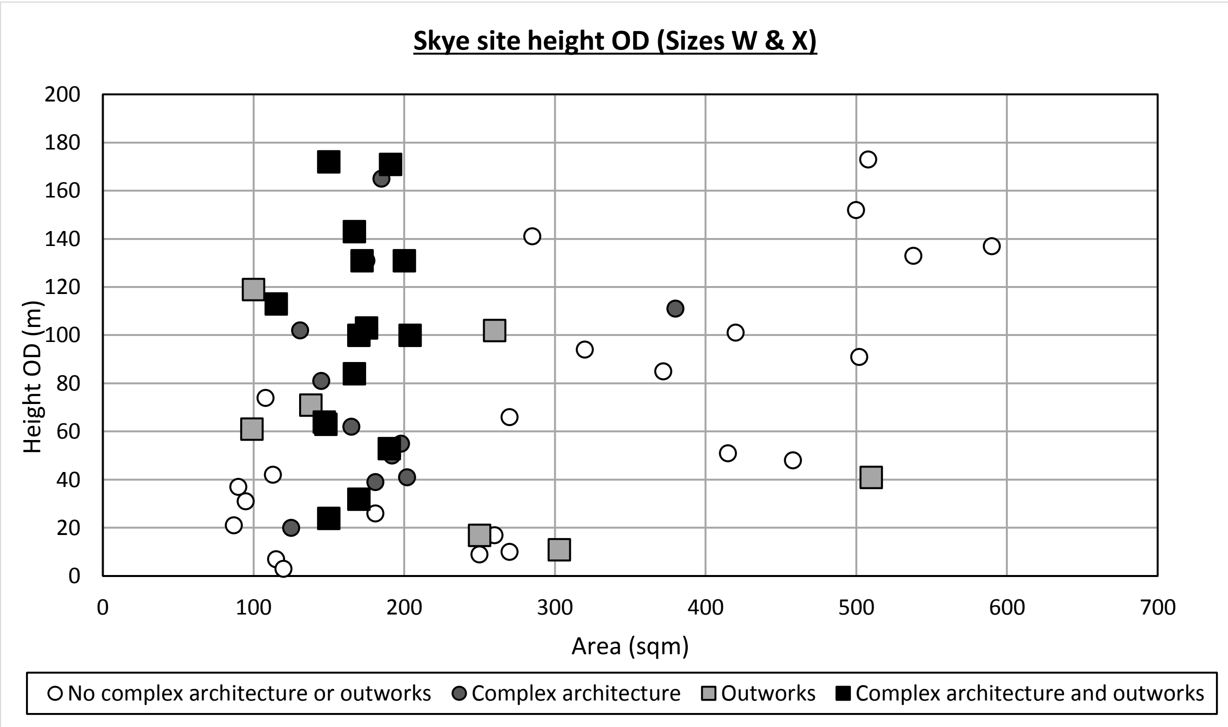

Figure 8.23: *Site area compared to height above sea level, categorised by presence of architectural features. Among the smallest sites those with outworks are more likely to be higher.*

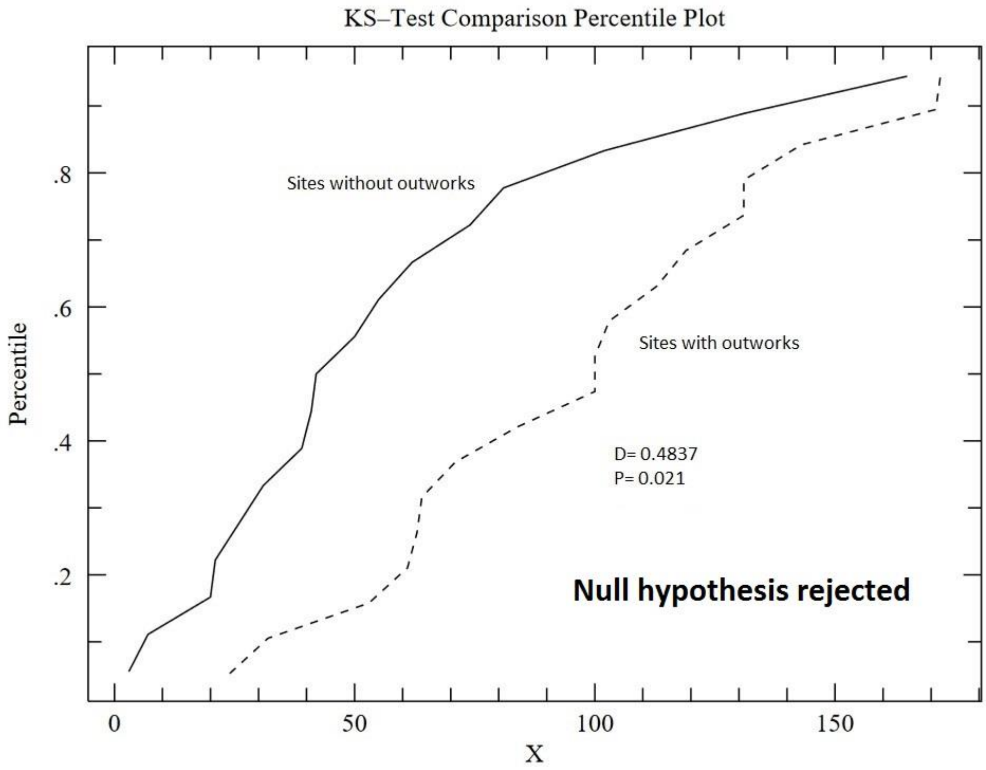

Figure 8.24*: K-S test comparing altitude above sea level of size W sites with and without outworks. Sites with outworks are strongly likely to be higher.*

8.2.2 Topographic Prominence

Due to most of the interior of northern Skye being very high ground, much higher than the highest settlement sites, and lower-lying land being a narrow coastal strip, most enclosed sites have land of a greater altitude nearby. Despite this, a majority of sites classed as forts have more land below than above within 1 km – this is true of all of the larger enclosures above 2000 m^2 in internal area (e.g. Figure 8.38), apart from the possible prehistoric fort at the late 1st millennium AD ecclesiastical site of Annait (Figure 8.25). There is, however, not a statistically significant correlation between site size and local prominence, with the ten largest sites in the case study not likely to be drawn from a different dataset from others in terms of the percentage of land below them (Figure 8.29). Smaller sites are very mixed in their prominence – sites traditionally classed as brochs may be more prominent than duns. 74% of brochs are situated in places with more than half of all land within 1 km below them, compared to 67% of duns (Figure 8.26). No site in the case study area is positioned on the highest point within its 1 km radius, although two duns, Dun Connavern and Tom na hUraich (Figure 8.40), are very close to that level of topographic prominence. Both sites are located on the highest hills in their local area, but not quite on the top of that hill. Size W sites that have some evidence for complex architecture are clustered with between about 55% and 90% of the surrounding land below them (e.g. Dun Hallin, Figure 8.39), and would appear to be placed in quite prominent positions in their localities. This is also true of the primarily solid walled group of size X sites (Figure 8.27 & 8.28). While many sites are in prominent positions, enclosed sites in northern Skye are not as prominent on average as those of Kirkcudbrightshire or Kintyre. Locations that are more topographically prominent than average, but not the most prominent point in the landscape, were favoured for those prehistoric settlement sites that are visible on Skye today.

Size Z sites generally have no higher ground within 200 m (Figure 8.30), a contrast to the 1 km distance (Figure 8.25; e.g. Figure 8.38). Two exceptions are Annait, and Dun Mor, which has a knife-shaped ridge of land overlooking it just over 100 m to the north east, although this is separated from the site by a valley bounded by sheer vertical rock (Figures 8.36 & 8.41). When statistically tested, the ten largest sites in northern Skye (size Z) can be shown to be significantly more topographically prominent within a 200 m radius than the next largest ten sites (five size X and five size Y sites; Figure 8.34). Perhaps the 1200 m^2 size is significant, and indicative of an enclosure size that required locally prominent, or possibly defensive, positioning in the landscape. Few sites between 500 m^2 and 1200 m^2 in extent share this hilltop placement, particular examples being Dun Maraig and Dun na hAirde which are located at or below positions of average prominence in their immediate surroundings (Figure 8.31). These two forts are partially or completely cut off by the sea, and make up for the defensive weakness of their lack of prominence with inaccessibility or very restricted access from land. Dun Liath and Dun Eyre also have significant amounts of higher ground nearby, although both are positioned on fairly prominent knolls. The former is positioned on a coastal hillock with sheer cliffs defending the northern and western sides (Figure 8.37 & 8.42). This precipitous, more economically defensible hillock may have been preferred by the builders over a higher, but open, hill approximately 100 m to the north east, due to the ease of fortifying the site, suggesting that for this site defensibility may have outweighed prominence in the landscape as a criterion for its placement.

While size W sites are not definitively different in prominence to size X, Y and Z within the 1 km radius, this is not the case within the 200 m distance. Size W sites were primarily placed in locations that are more prominent than an average location in the landscape, but are rarely the highest point within their immediate surroundings (Figures 8.13-8.33; Figure 8.40). This is especially true of circular sites – Dun Feorlig and Dun Grianan are the only circular examples that do not have more than 50% land below the site within a 200 m radius (Figure 8.32). The former is a very dilapidated coastal site on the shores of Loch

Caroy in Bracadale that may be a complex Atlantic Roundhouse, as defined by Armit (1996), although no complex architecture is visible. Dun Grianan is a complex roundhouse situated on a promontory jutting out into Loch Mealt, an inland loch on Trotternish, and is thus positioned similarly to the locations of many islet brochs and duns in the Outer Hebrides, such as Dun Bharabhat in Lewis or Dun Thomaidh in North Uist (Armit 1996, 117-9; 123). Other than these unusual examples, the majority of sites of roofable size were placed on rises or knolls, but not positions where the topography offered a marked defensive advantage.

Size W sites with outworks can be shown statistically to have a higher percentage of land below them than Size W sites without outer defences, over the 200 m radius (Figure 8.35). This further supports the assertion that outworks were not an attempt to compensate for lack of natural defences. Instead, they may have added prestige or enhanced outsider's perception of their size and importance. Notably, the prestige benefits offered by outworks were mainly limited to sites that were already comparatively dominantly positioned. They may also in many cases be walls designed to prevent livestock or humans from being blown over precipitous cliff faces. Whether deliberate or not, it is probable that outworks added an appearance of size and, possibly, importance to Atlantic Roundhouses that were already among the more prominent examples of their type, and may suggest differences in status between structures of broadly similar form.

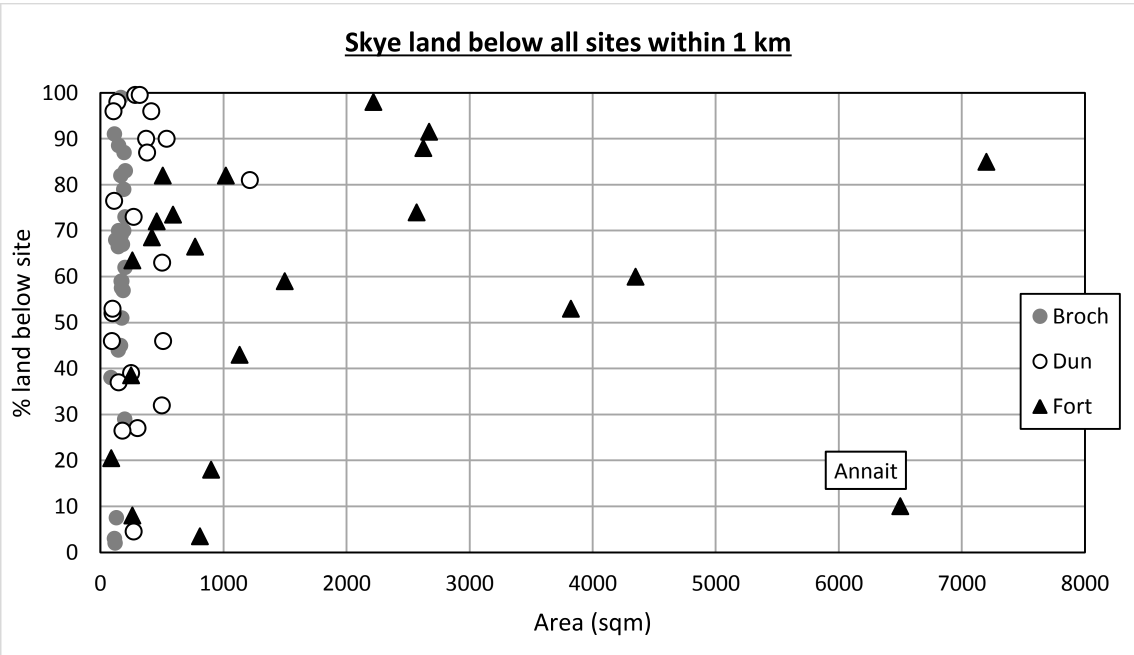

***Figure 8.25**: Percentage of land below sites within 1 km. Showing generally higher prominence of larger enclosed sites.*

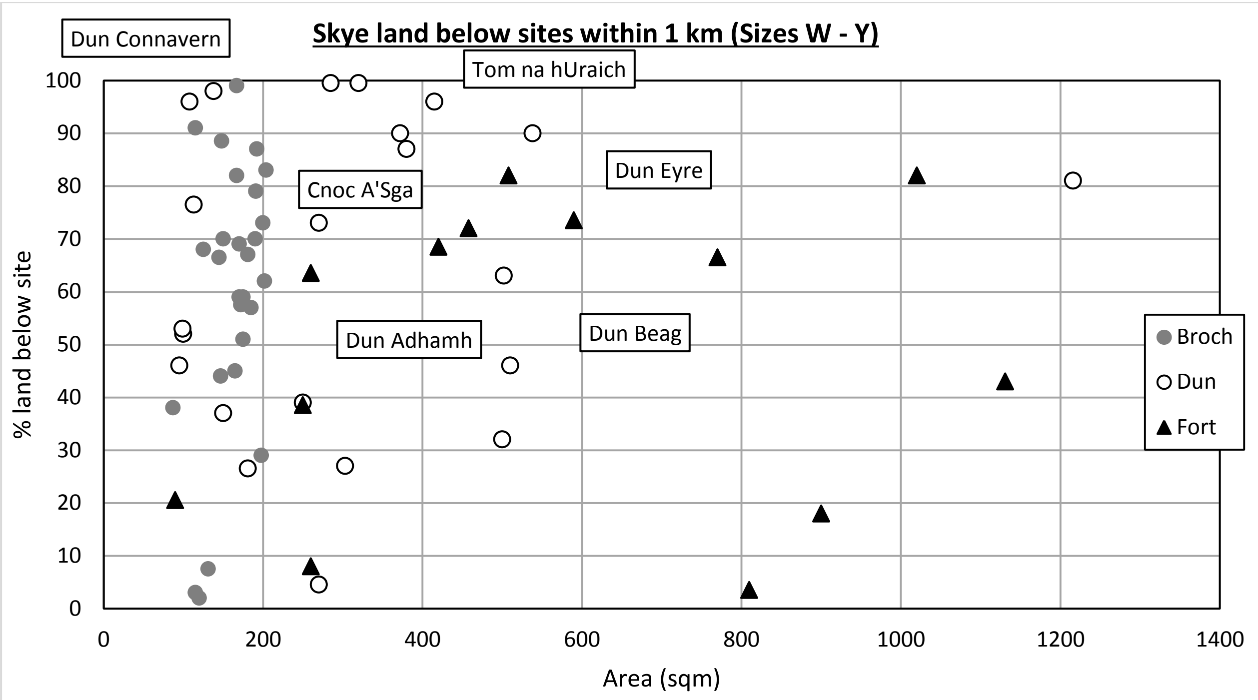

Figure 8.26*: Percentage of land below sites within 1 km. Several prominent sites are identified.*

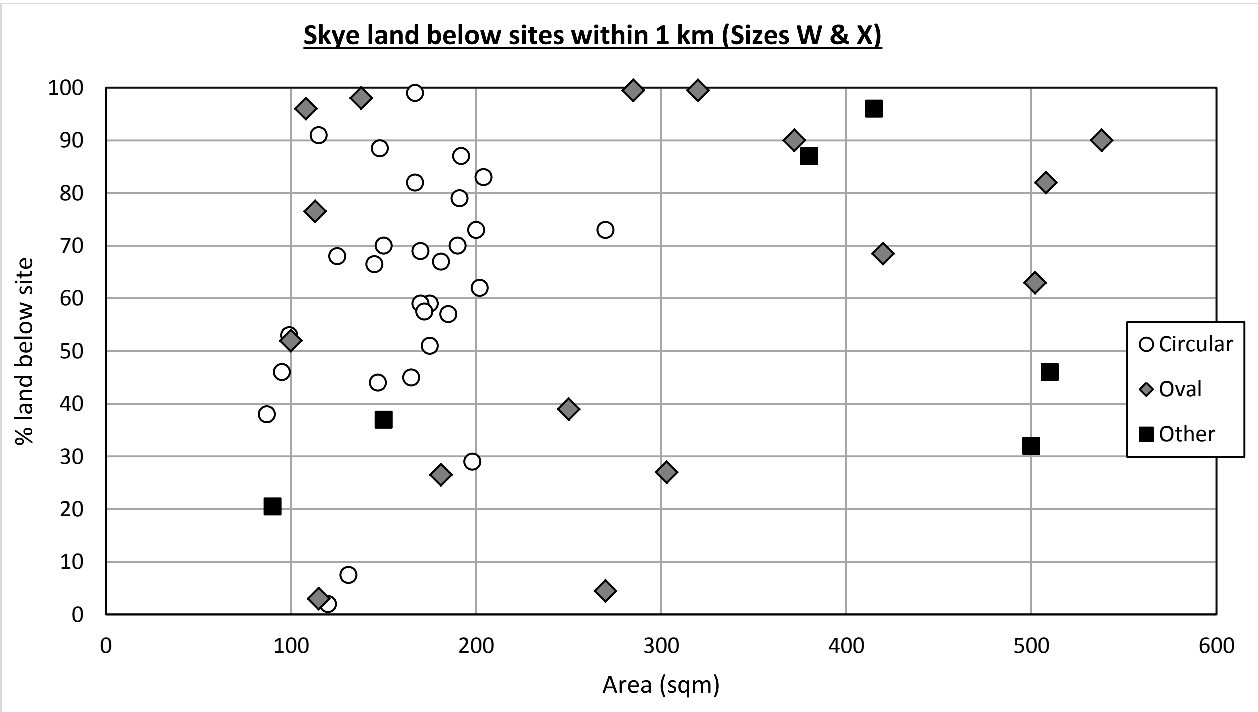

Figure 8.27*: Percentage of land below sites within 1 km radius, categorised by shape in plan. Size X sites are relatively prominent.*

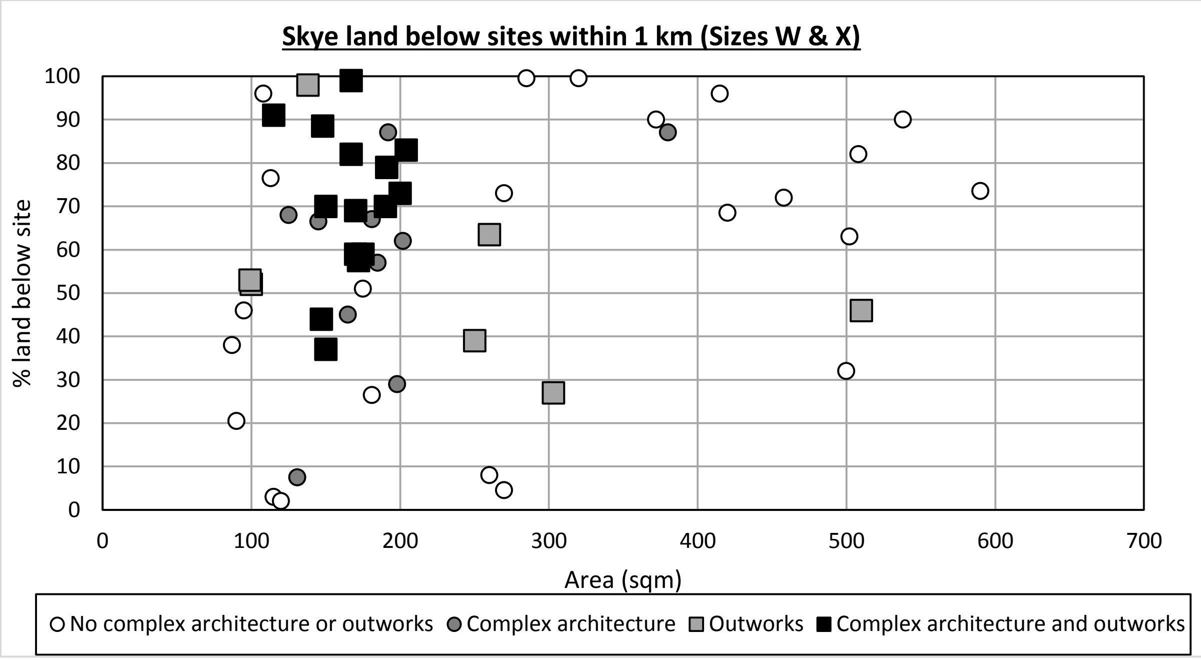

Figure 8.28: *Percentage of land below sites within 1 km radius, categorised by presence of architectural features. Size W sites with outworks and complex architecture are relatively prominent.*

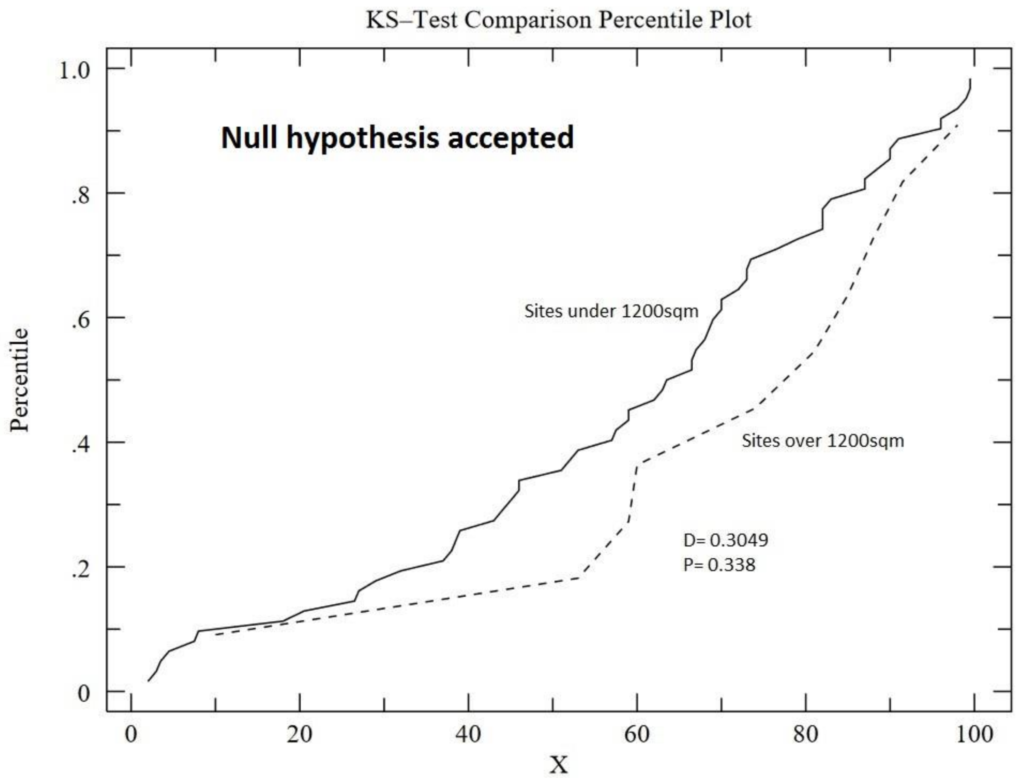

Figure 8.29: *K-S test comparing percentage of land below sizes W, X and Y sites with size Z sites over a 1 km distance.*

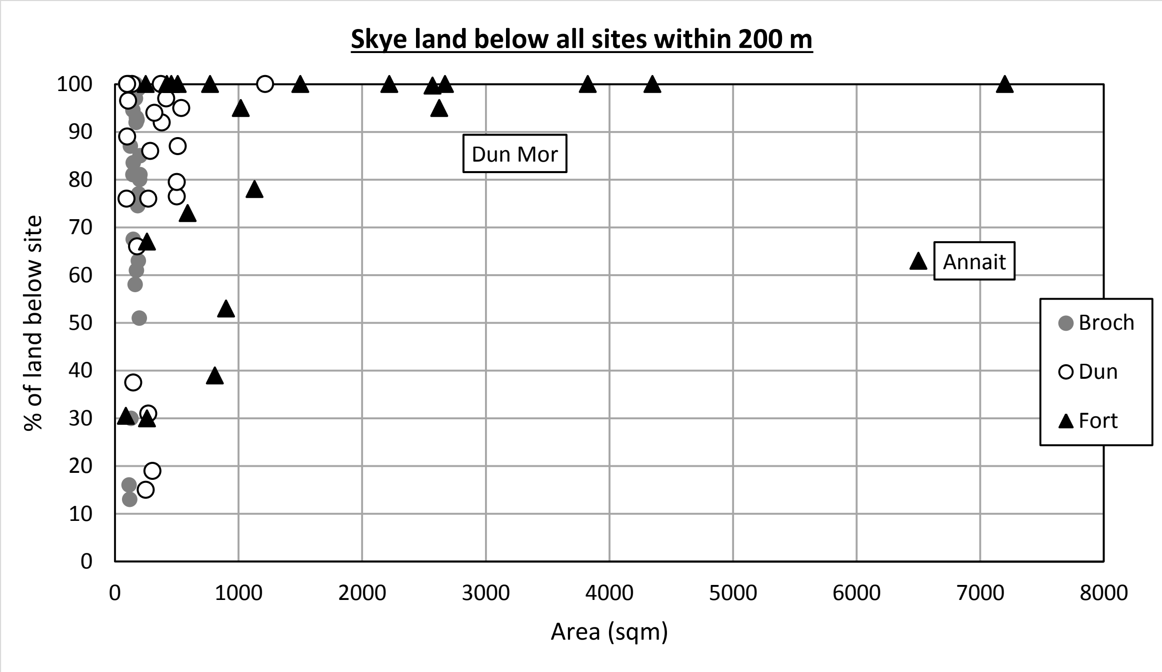

Figure 8.30*: Percentage of land below sites over a 200 m radius. Almost all size Z sites have no land above them. This is not the case for sizes W, X and Y.*

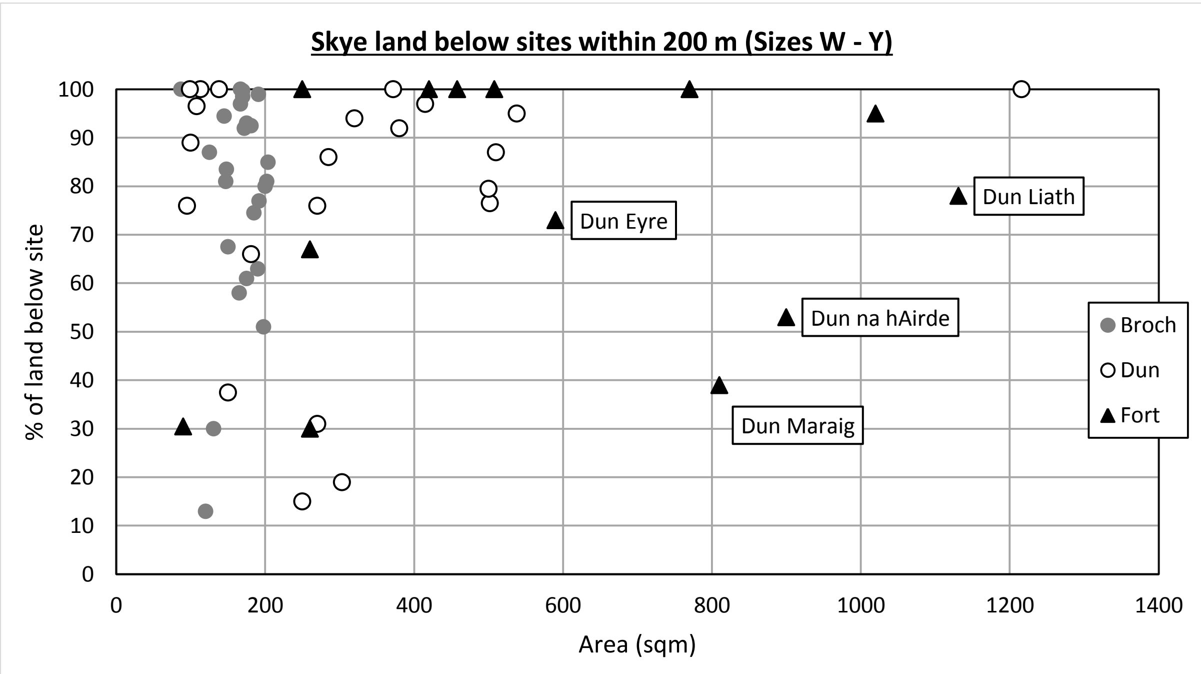

Figure 8.31*: Percentage of land below sites within a 200 m radius. Showing that several size Y sites are not at all prominent.*

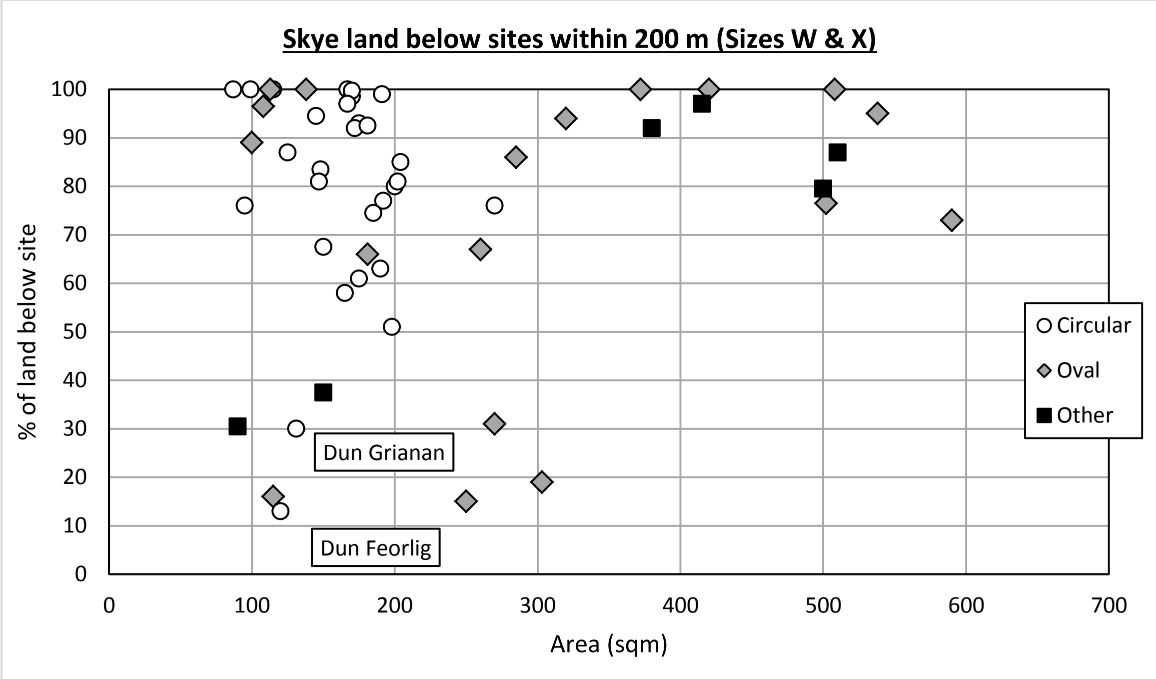

Figure 8.32*: Percentage of land below sites within a 200 m radius, categorised by shape in plan. Showing that circular size W sites are comparatively prominent, with two named exceptions. A lower proportion of oval or irregular/rectilinear size W sites are prominent, while all size X sites are.*

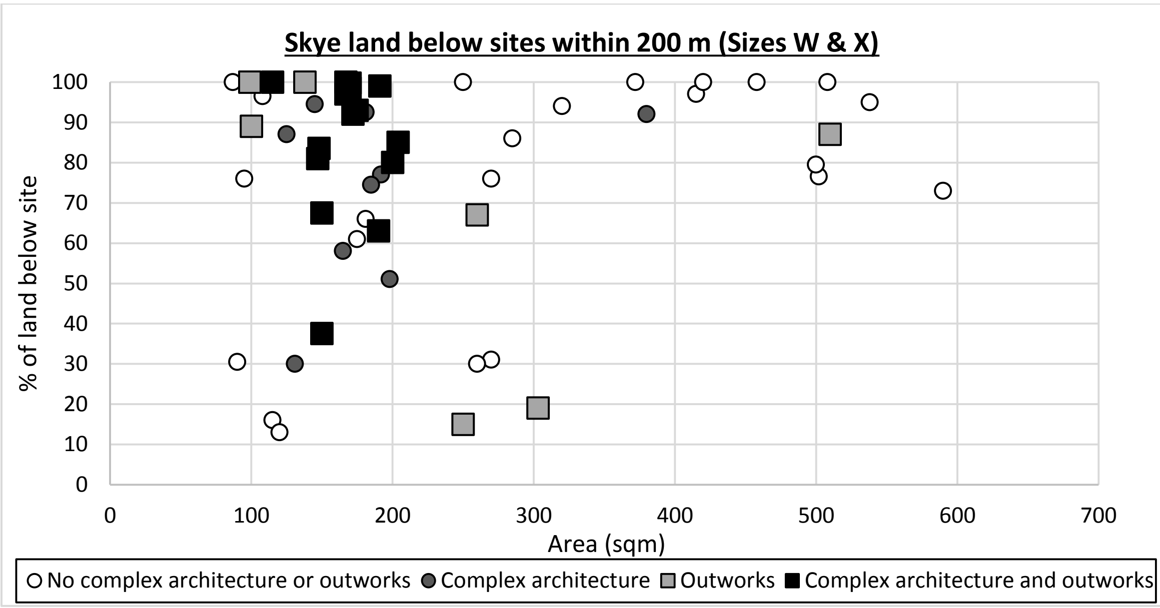

Figure 8.33*: Percentage of land below sites within a 200 m radius, categorised by presence of architectural features. Most size W sites with complex architecture and outworks are prominent.*

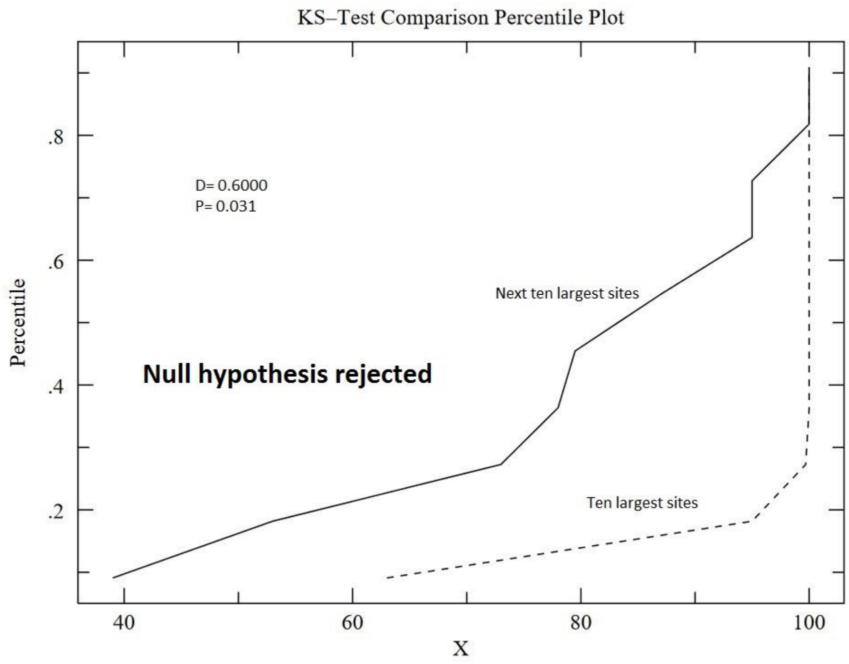

Figure 8.34*: K-S test comparing percentage of land below the ten largest sites in northern Skye (size size Z) with the next ten largest sites (five size X and five size Y) within a 200 m radius. There is a significant statistical difference between the topographic prominence of both groupings.*

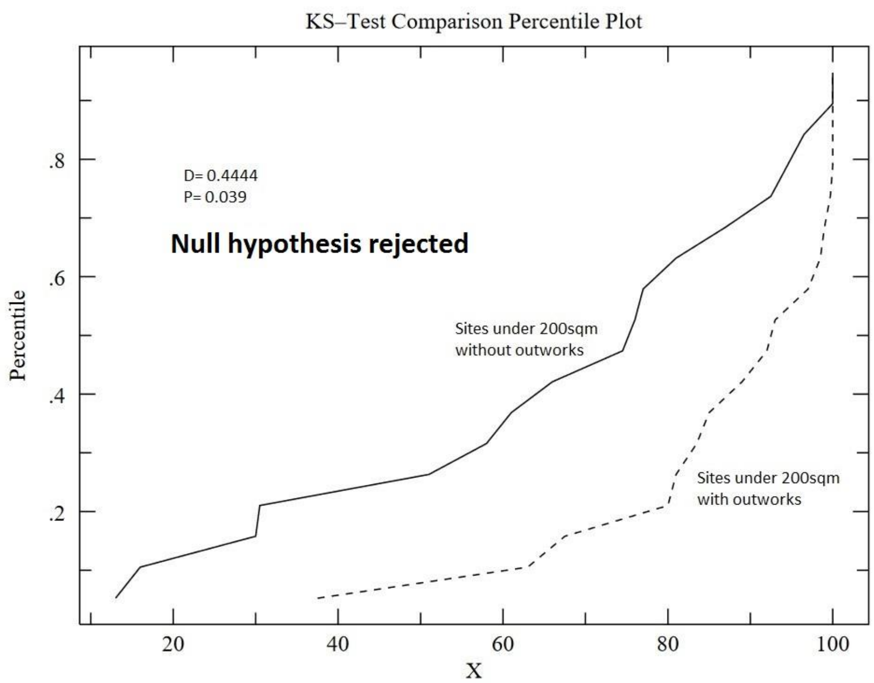

Figure 8.35*: K-S test comparing percentage of land below size W sites with and without outworks, within a 200 m radius. The sites with outworks are strongly likely to be more prominent.*

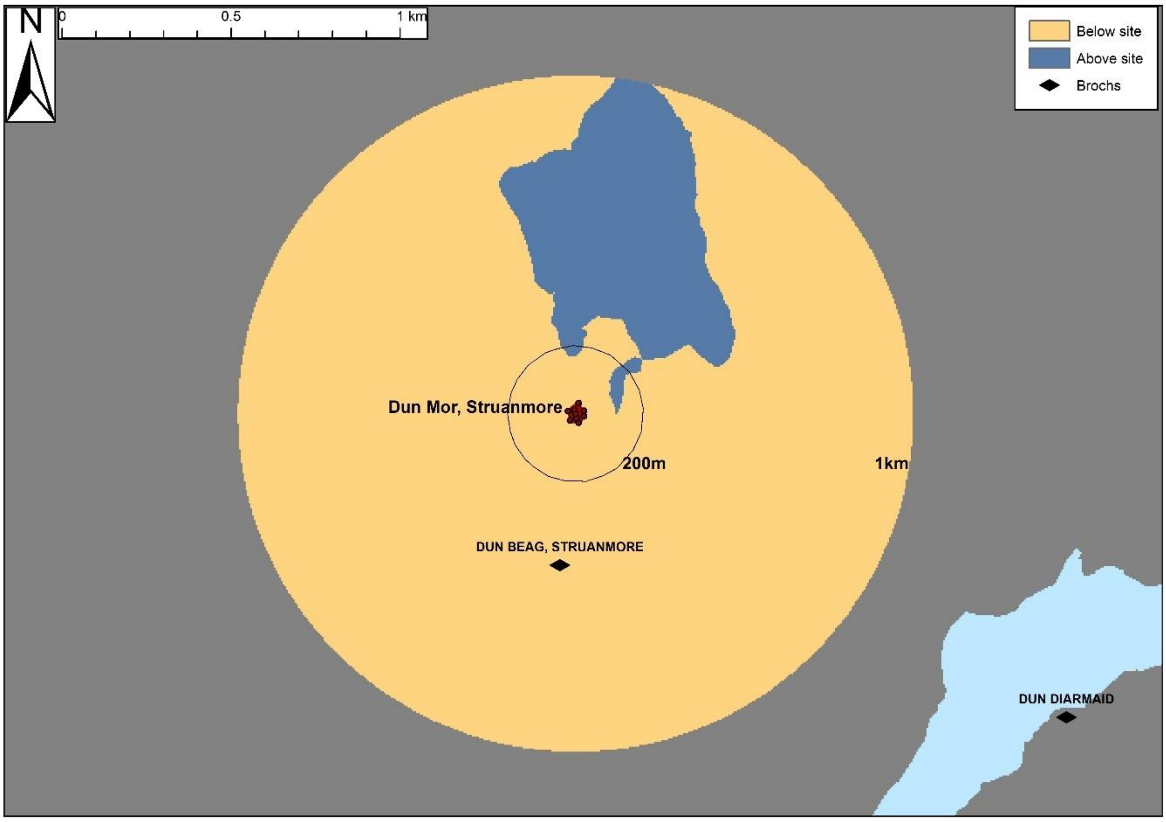

Figure 8.36: *Dun Mor, Struanmore – Land above and below within 1 km and 200 m.*

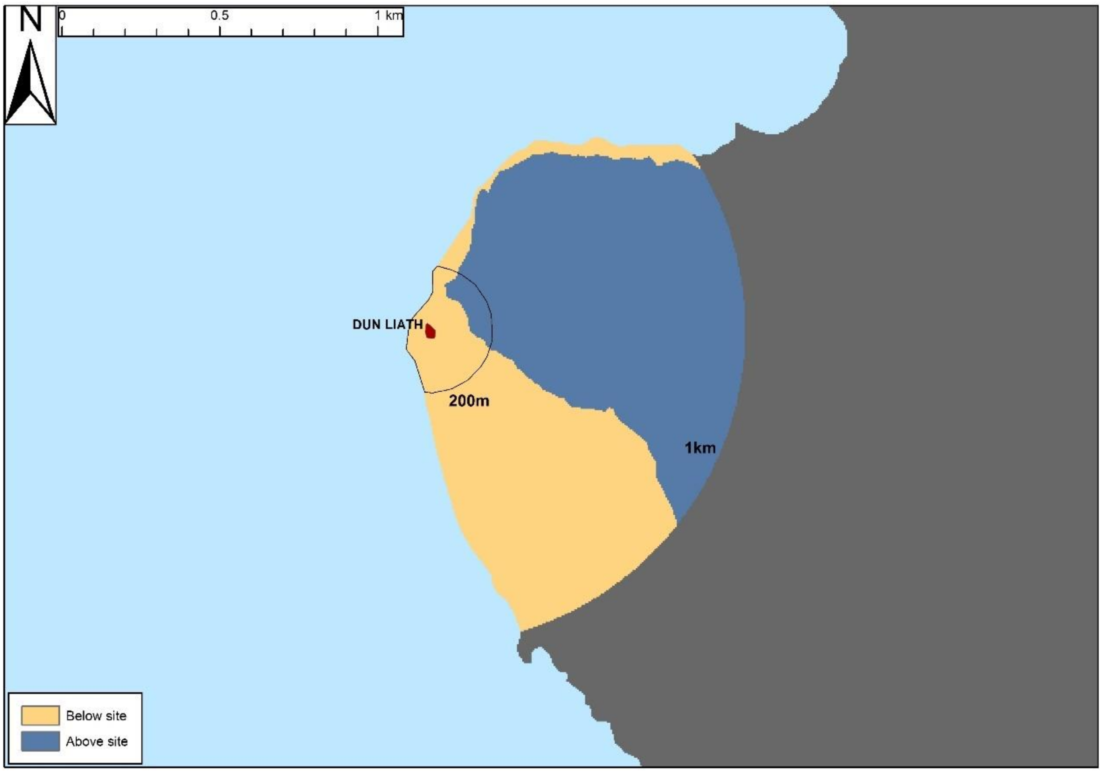

Figure 8.37: *Dun Liath – Land above and below within 1 km and 200 m.*

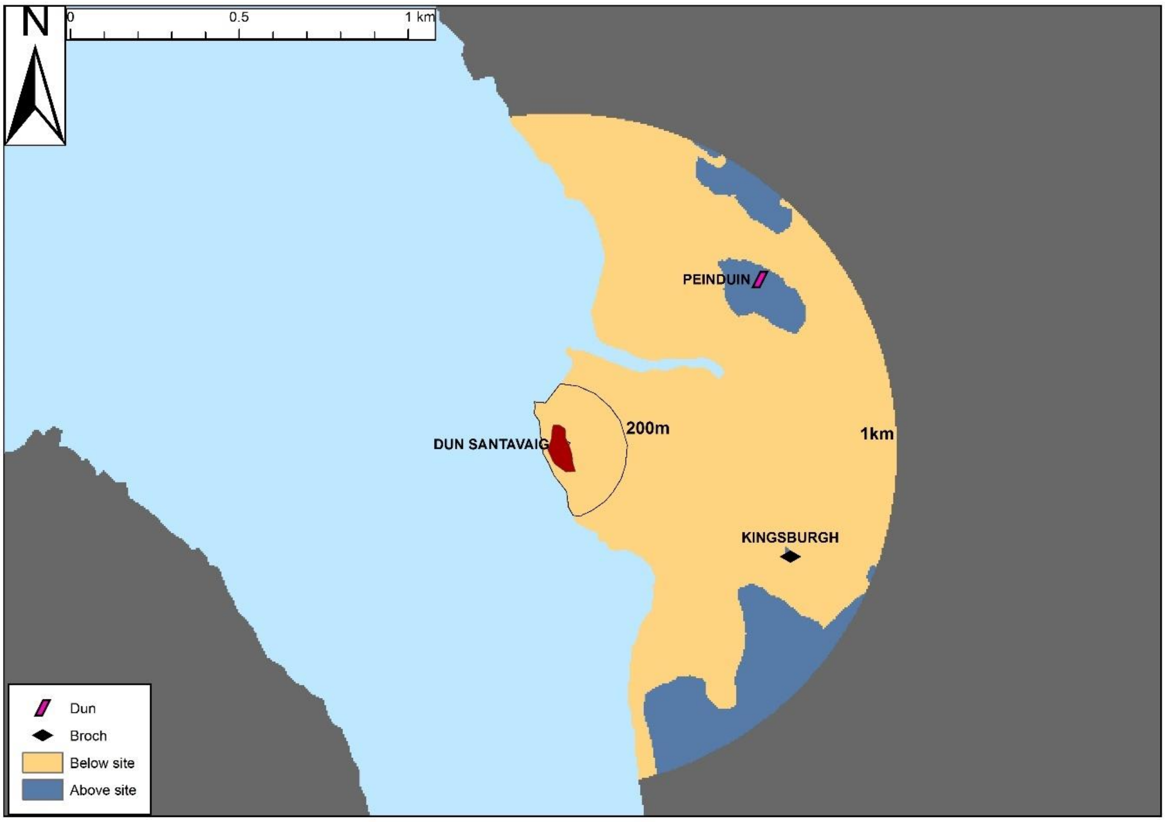

Figure 8.38: *Dun Santavaig – Land above and below within 1 km and 200 m.*

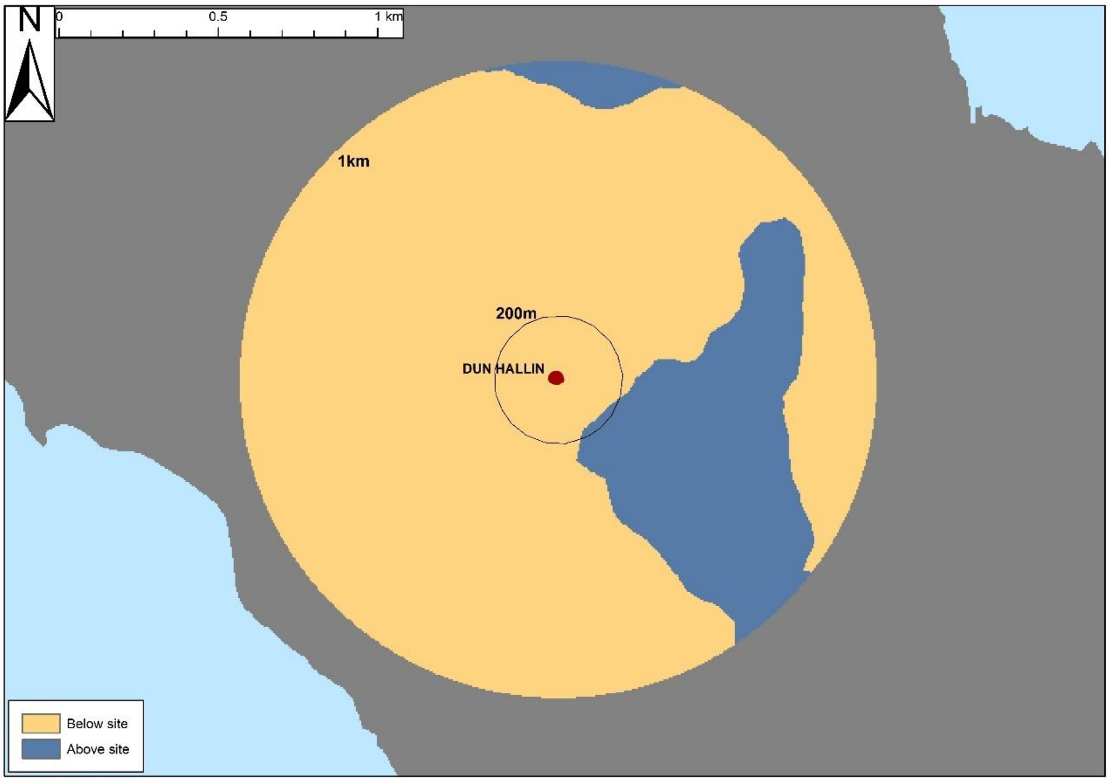

Figure 8.39: *Dun Hallin – Land above and below within 1 km and 200 m*

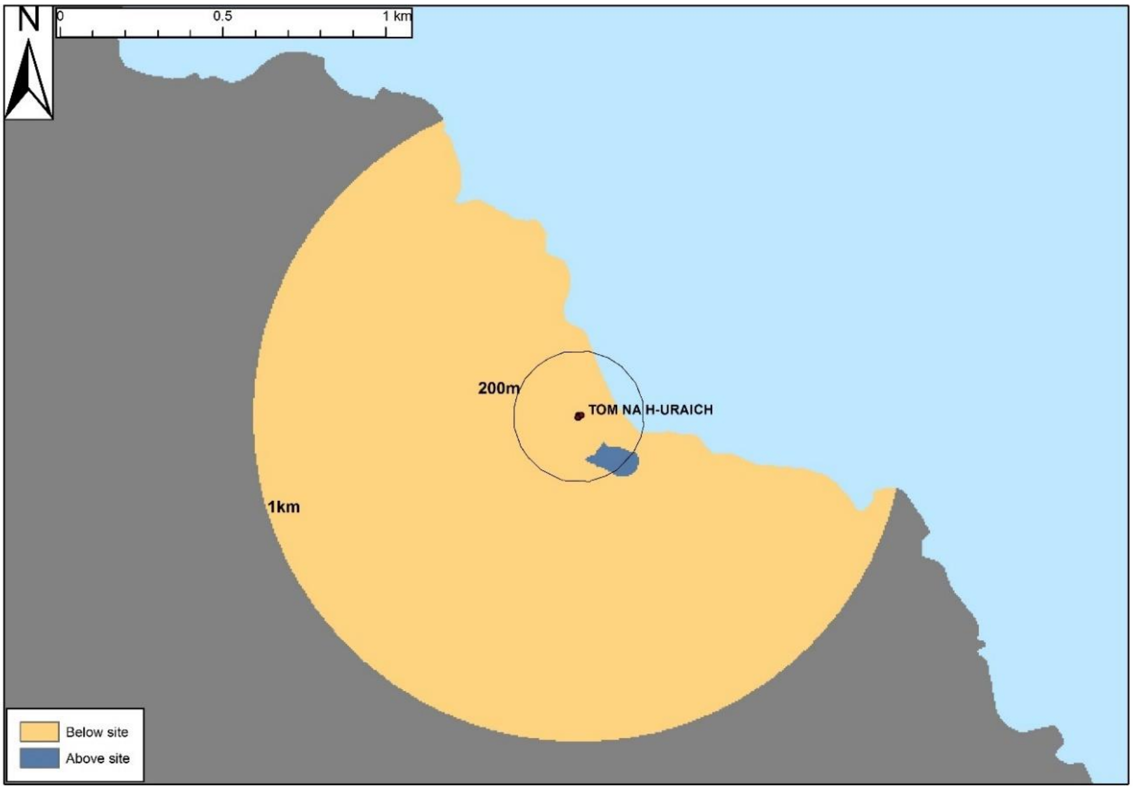

Figure 8.40: *Tom na H-Uraich – Land above and below within 1 km and 200 m.*

Figure 8.41: *Dun Mor Struanmore, taken from the south west, facing north east, from within the complex Atlantic Roundhouse of Dun Beag. Higher ground lies to the right, separated by a valley and sheer rock faces.*

Figure 8.42: *Dun Liath, taken from the higher ground 100 m east of the site, facing west.*

8.2.3 Site visibility in the landscape

The visibility of northern Skye's landscape from land was measured using a cumulative viewshed from 2500 random points as described in chapter 6.3.3. More randomly generated points were used for the Skye viewshed than that of Kintyre as the area of the former case study was considerably larger. However no exact mathematical correlation has been attempted between number of points and size of case study (i.e. the number of points per square kilometre is not exactly the same in Kintyre as it is in Skye) so the visibility statistics for all case studies are not directly cross comparable. The cumulative viewshed was carried out from points both within the case study area and up to 10 km outside it to the south east, to avoid the edge effect problem (See Chapter 6.3.3).

As with Kintyre and Kirkcudbrightshire, both the most visible pixel enclosed by sites and the mean visibility of the ground occupied by the site were used for the analysis, and the results generated are shown in Figure 8.43 and summarised in Table 8.1. As previously discussed, much of northern Skye is high ground, far higher than archaeological evidence suggests was considered suitable for enclosed prehistoric settlement. Therefore the mean visibility of the landscape without all land above 175 m OD (or approximately the altitude of the highest site) has also been determined for comparative purposes. A 5 m by 5 m pixel on land occupied by enclosed sites can be seen by a mean of 30 random points, compared to a mean of 22 points able to see any pixel in the landscape below 175 m altitude (Table 8.1). The interiors and defences of sites are thus slightly more visible than the general landscape, and there is remarkably little variation in mean interior visibility among different categories of site, varying between 28 random points for sites classed as brochs to 31 for duns and larger enclosures. If the most visible pixel enclosed is used there is significantly less variation between the largest and smallest sites, or forts and duns, than in the Kintyre case study (Table 7.1) – while the numbers cannot be directly compared, large enclosures in Kintyre can be seen by three times as many random points as small, potentially roofable examples, while in Skye the ratio is 56:40. There therefore seems to be a less obvious contrast between the visibility of the largest and smallest sites in the landscape in Skye – the biggest forts are not in unusually visible positions compared to the remainder of sites.

Type	**Most visible pixel**	**Mean visibility of site footprint**
Total case study area		25
Total case study area without land >175 m OD		22
All sites	44	30
Brochs	40	28
Duns	44	31
Forts	51	30
Size W	40	29
Size X	45	31
Size Y	48	24
Size Z	56	31

Table 8.1: *The number of randomly-generated points that can see sites and the general landscape in northern Skye, using both the most visible pixel and the mean visibility of the interior and defences.*

Most sites classed by the RCAHMS as forts are more visible from land than an average pixel in the landscape when mean enclosed visibility is used (Figure 8.44). Notable exceptions are some of the size Z sites, with the areas enclosed by Dun Skudiburgh, Ullinish and Annait less visible than an average pixel in the case study on ground below 175 m OD. In contrast, sites classed as brochs are distributed roughly equally above and below the black line which represents mean landscape visibility in Figure 8.44, suggesting that, when considered as a homogeneous class, visibility of the wider landscape is not a major consideration when it comes to broch placement. The locations occupied by fourteen brochs are less visible on average than a mean pixel on land under 175 m OD, with only twelve more visible, albeit some of the locations are visually extremely prominent, such as those occupied by Dun a'Cheitechin and Dun Borve, both inland sites on the slopes surrounding the valley north west of Portree. It is unsurprising that the miscellaneous class of duns has great variability in its visibility, as it is so diverse in size and morphology, although certainly there are proportionally fewer duns than brochs falling below the black line in Figure 8.44.

Of interest, is the apparent homogeneity in site visibility of enclosed sites between approximately 400 m^2 and 3000 m^2 in area, when the most visible pixel in the interior or on the defences of sites is used for the analysis (Figure 8.45). 61% of sites in this size range can be seen by between 60 and 80 random points, and 89% of sites can be seen by between 40 and 80 points. This suggests a consistency in the placement of enclosures of this size in Skye that is not present among smaller sites. The most visible sites (from land) in northern Skye are within size W, and classed as duns and brochs – Cnoc A'Sga, Dun Suladale and Dun a'Chetechin, while the least visible are size W and X coastal sites – Kraiknish and Aird duns, Dun Gearymore broch and the tiny promontory fort at Sgoir Beag on Waternish (Figure 8.45 & 8.46). Sites classed as forts do not differ statistically as a dataset from duns but do differ from brochs, with forts more visible up to at least the 85th percentile when using the most visible enclosed pixel (Figure 8.48 & 8.49). Notably the null hypotheses in these K-S tests were only marginally accepted or rejected. Brochs and duns are, however, drawn from the same datasets in this respect, with the null hypothesis comfortably accepted (Figure 8.50). It appears that the majority of sites classed as brochs and duns are less visible in the landscape than forts, and it seems probable that enclosed sites between 400 m^2 and 3000 m^2 in area, mostly classed as forts, were consistently and deliberately positioned in places that were easy to see from land.

Smaller enclosed sites with outworks may be slightly more visible than those without, but not to a statistically significant degree (Figure 8.51). It may be of some interest to explore whether those smaller sites with outworks share a similar visibility to the enclosures between 400 m^2 and 3000 m^2, as a clue to whether Atlantic Roundhouses with outworks fit more with other roundhouse-sized sites or the larger enclosure-sized sites in terms of their landscape positioning – in other words, is the internal structure or the outwork the more important determinant of where the site is placed? Only seven out of eighteen (39%) size

W sites with outworks can be seen by between forty and eighty random points (Figure 8.47) – they are considerably less consistent in their visibility than enclosures between 400 m^2 and 3000 m^2. The two datasets do differ when assessed statistically by Kolmogorov-Smirnov testing (Figure 8.52). Size W sites with outworks are mostly less visible with a few, very visible, outliers. Sites of roundhouse size with outworks seemingly do not fit with sites between 400 m^2 and 3000 m^2 in terms of their landscape positioning.

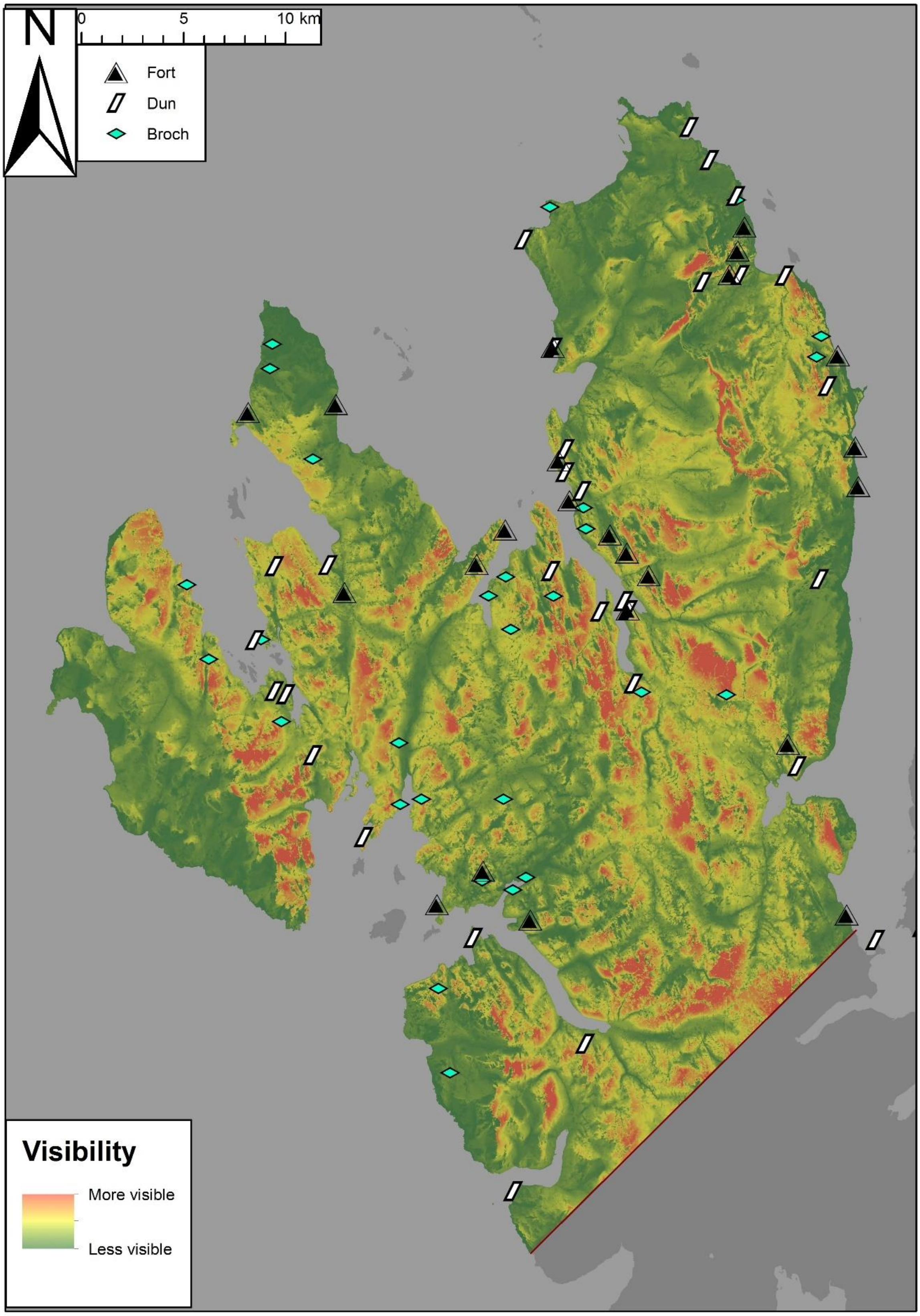

Figure 8.43: *Results of cumulative viewshed representing inherent visibility from land of case study area.*

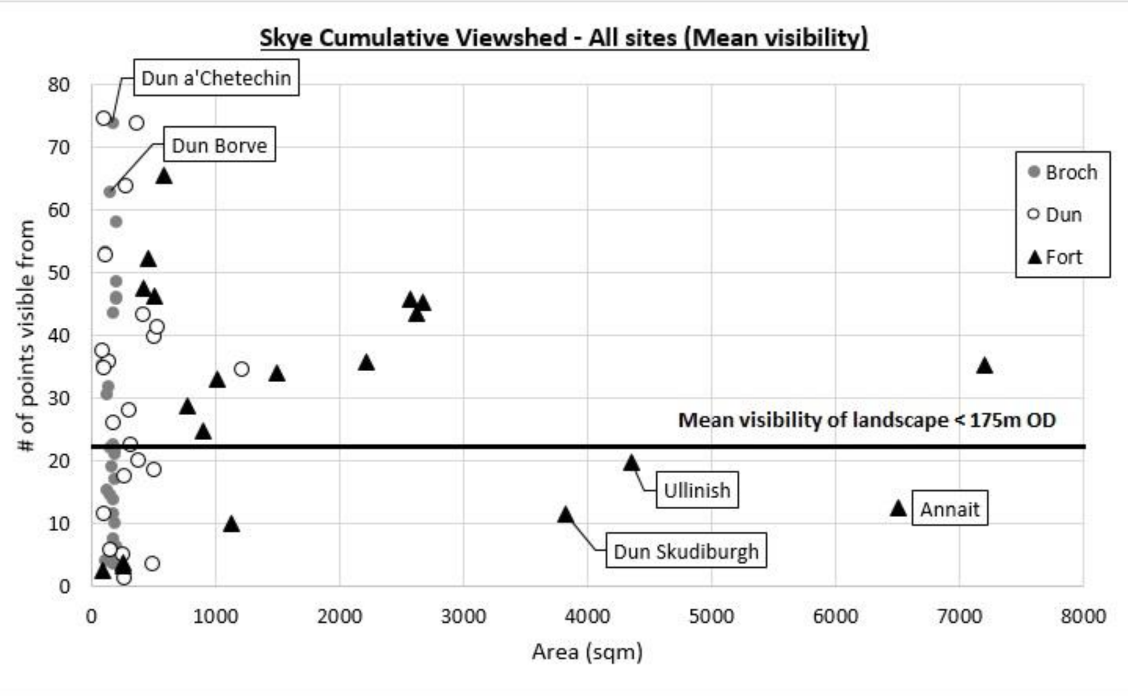

Figure 8.44: *The number of randomly-generated points that can see the site, using the mean visibility of pixels on and within the enclosing works. This shows that the interiors of the fort class are mostly more visible than the landscape, while this is not true for duns and brochs.*

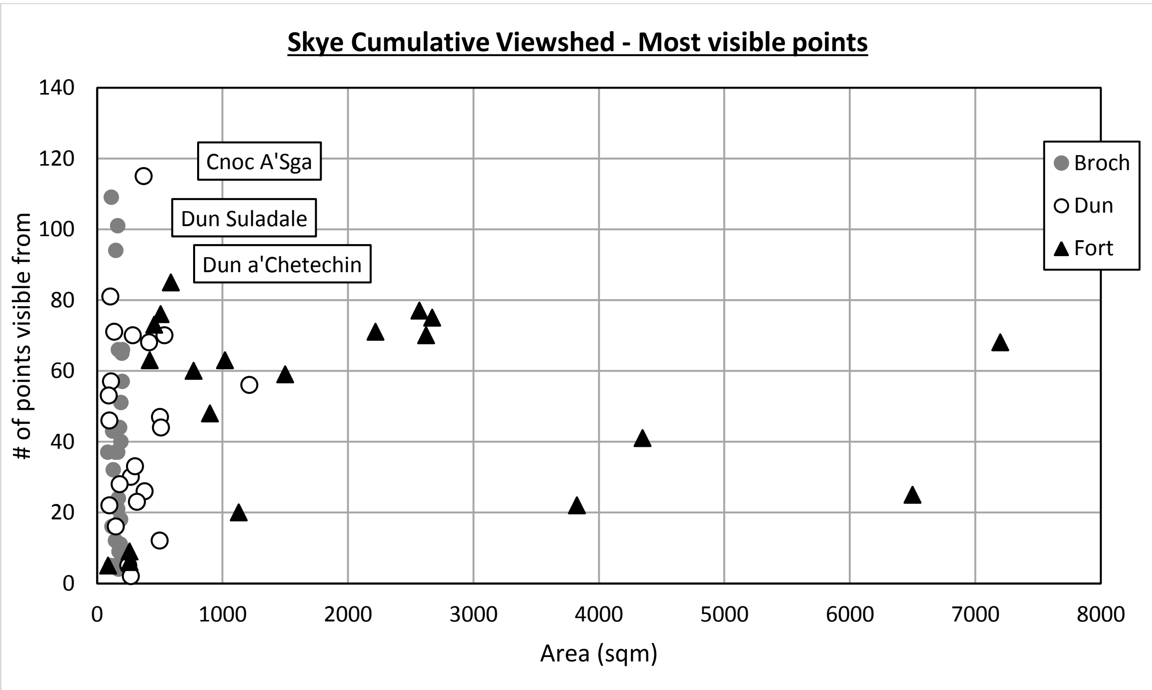

Figure 8.45*: The number of randomly-generated points that can see the site, using the most visible pixel in the interior of each enclosed site. Showing homogeneity among sites between 400 m^2 and 3000 m^2 in area.*

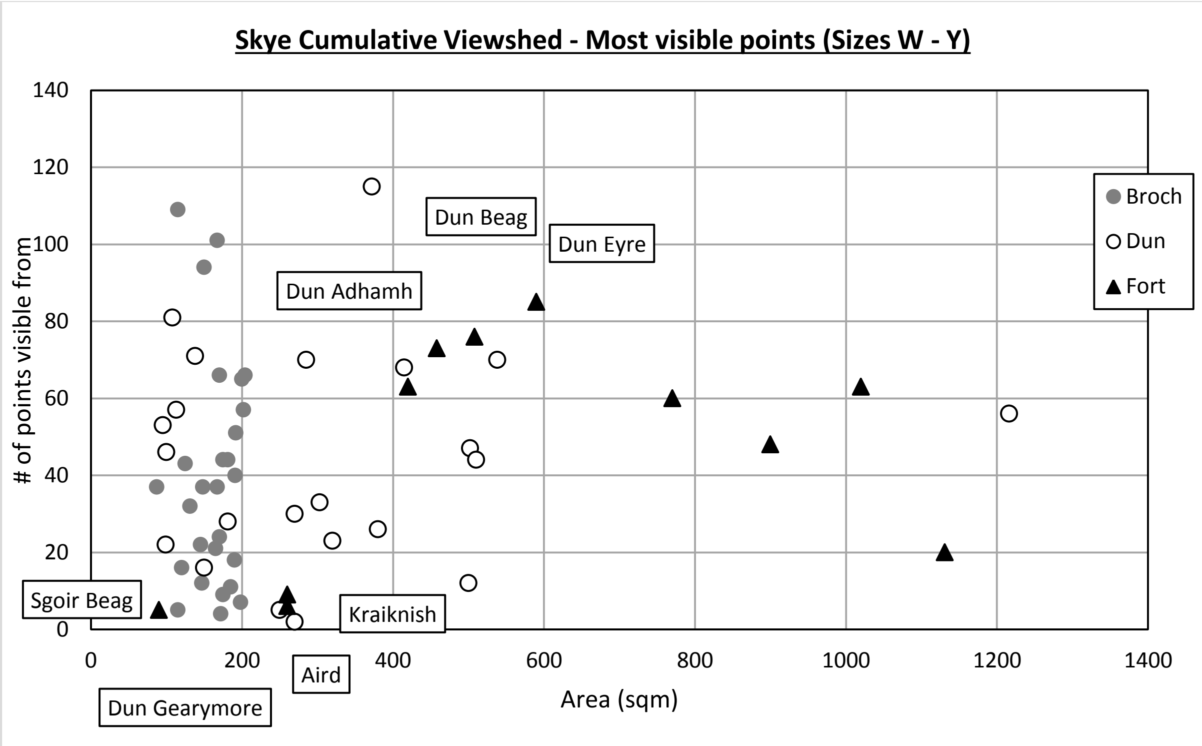

Figure 8.46*: The number of randomly-generated points that can see the site, using the most visible pixel in the interior of each enclosed site. Those mentioned in the text are labelled.*

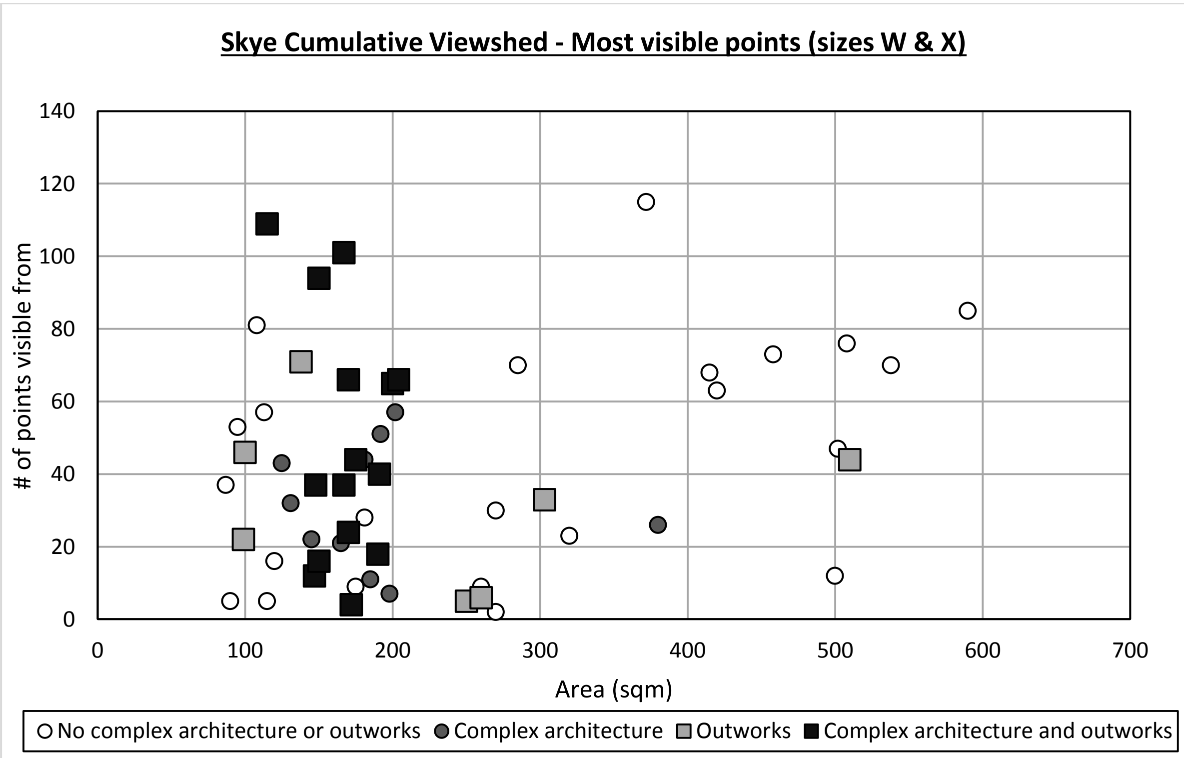

Figure 8.47*: The number of randomly-generated points that can see the site, using the most visible pixel in the interior of each enclosed site. Size W sites with outworks are not very visible in the landscape as a group.*

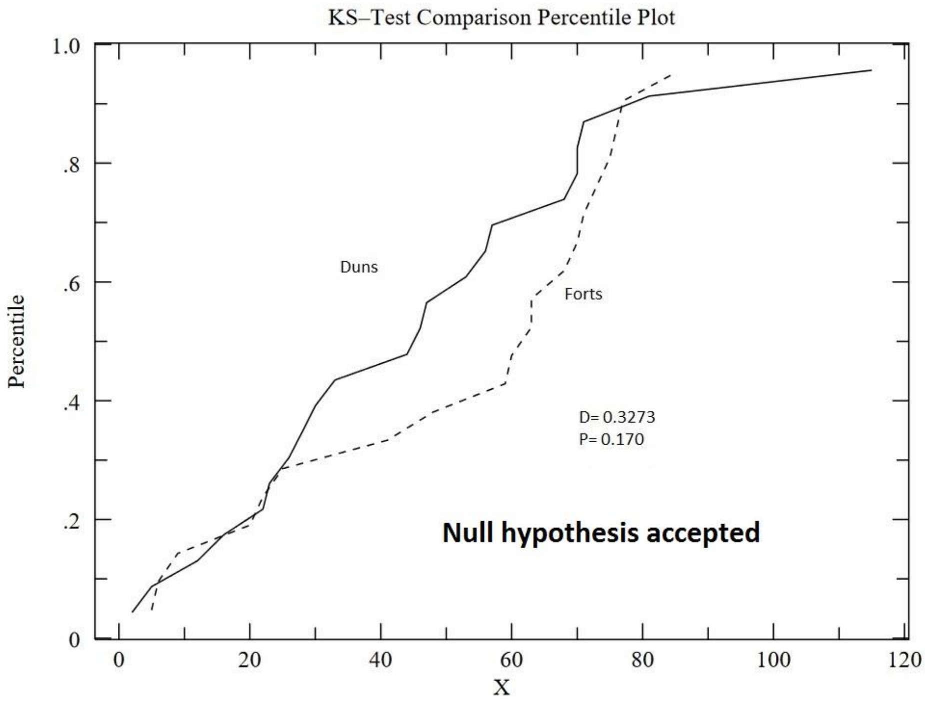

Figure 8.48*: K-S test comparing the inherent visibility of the positions of sites classed as duns and forts in the landscape (most visible pixel).*

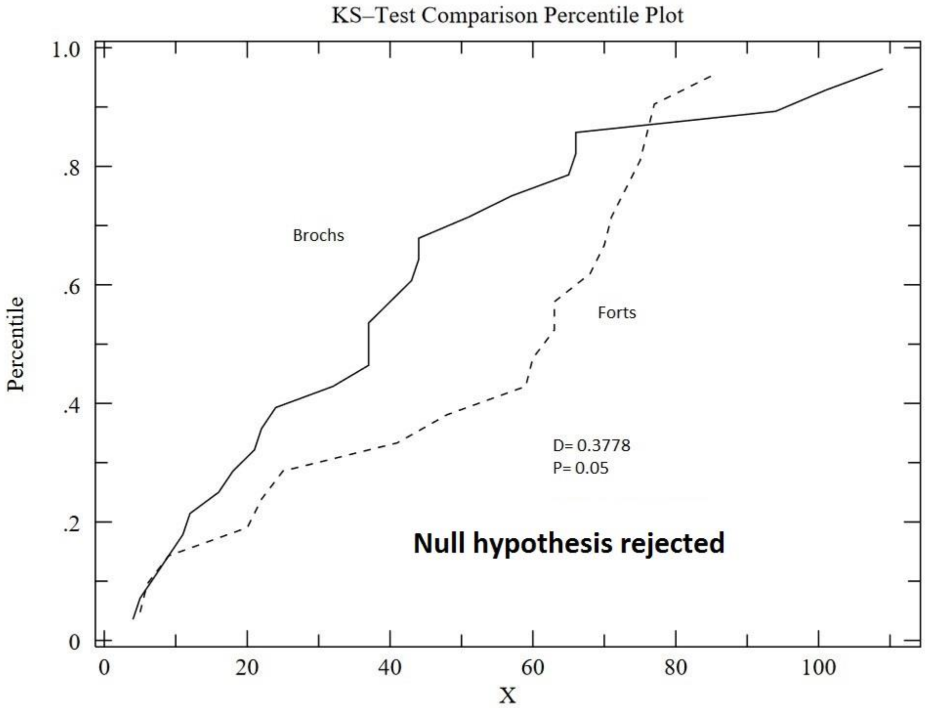

Figure 8.49*: K-S test comparing the inherent visibility of the positions of sites classed as brochs and forts in the landscape (most visible pixel). Forts are likely to be more visible as a dataset.*

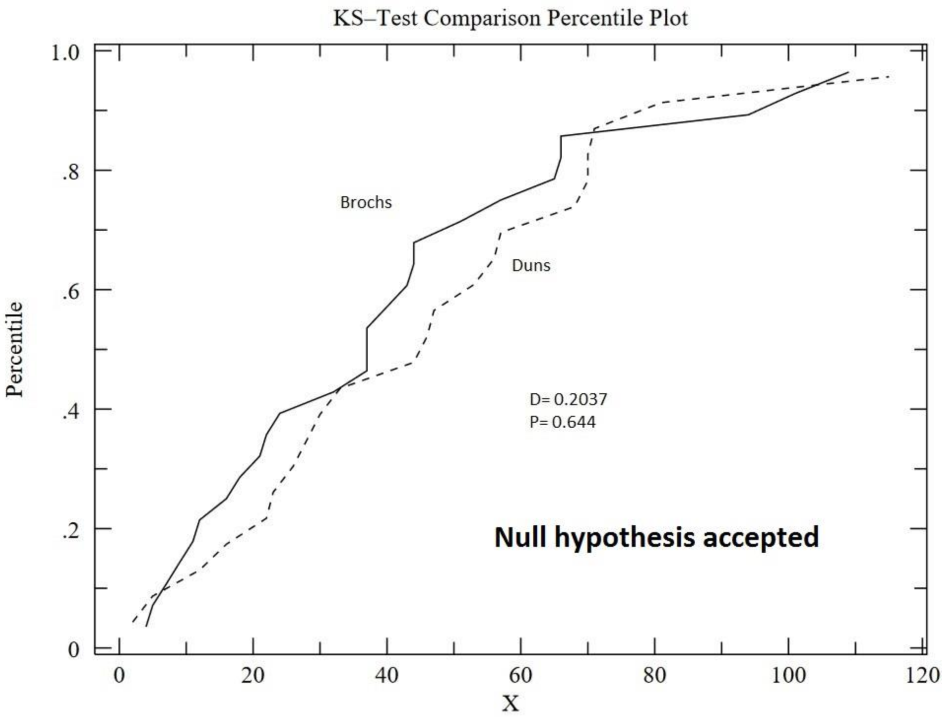

Figure 8.50: *K-S test comparing the inherent visibility of the positions of sites classed as brochs and duns in the landscape (most visible pixel). The two datasets are unlikely to differ.*

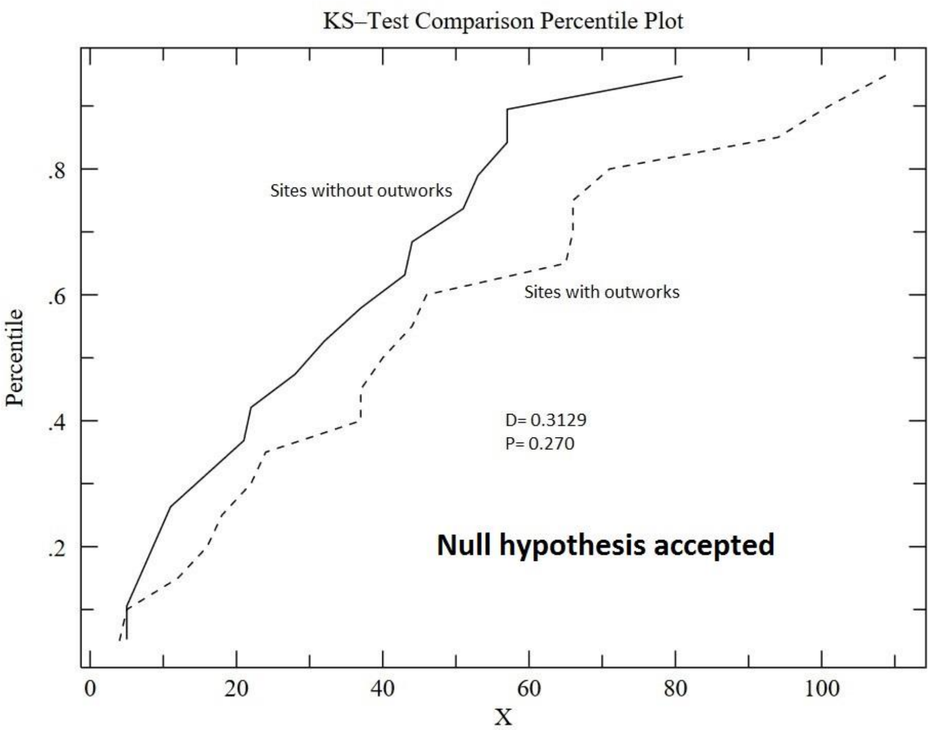

Figure 8.51: *K-S test comparing the inherent visibility of the positions of size W sites with and without outworks (most visible pixels).*

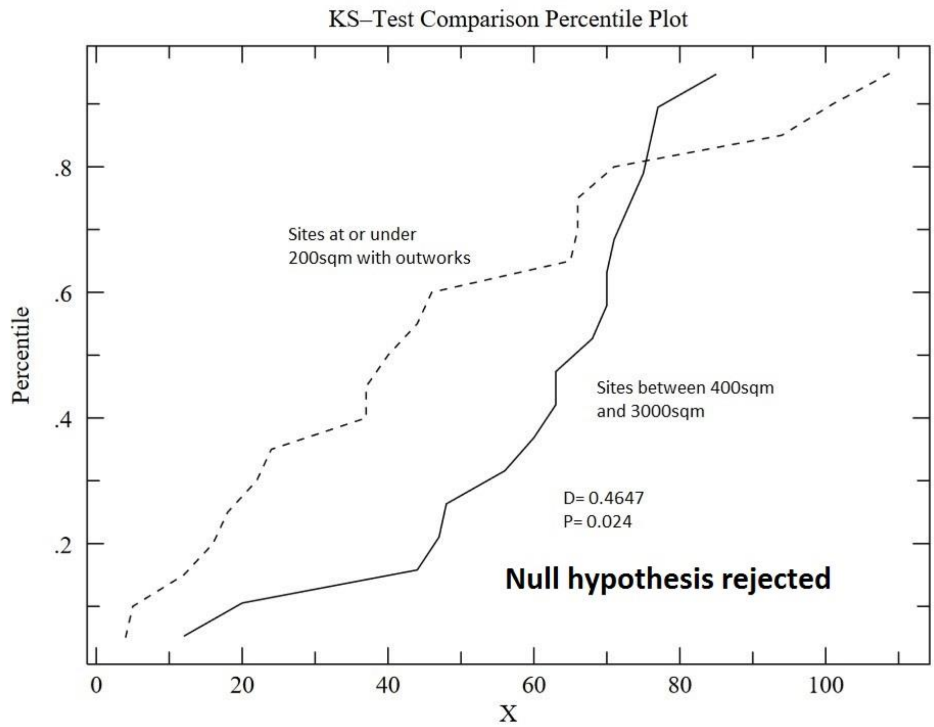

Figure 8.52*: K-S test comparing the inherent visibility of the positions of size W sites with outworks with all sites between 400 m^2 and 3000 m^2 in size.*

8.2.4 Visibility from sites in northern Skye

The patterns discernible in visibility from sites over a 5 km radius are quite similar to the cumulative viewshed analysis above (Figure 8.55; Figures 8.44-8.47). Sites classed as forts and brochs are, however, slightly closer together in terms of their visibility of land over this radius, which equates to a shorter distance than the 10 km visibility explored in the above cumulative viewshed analysis (Figure 8.55; Chapter 6.3.3). Some enclosed sites, such as Dun Skudiburgh and Dun Liath, are not among the sites with poorest land visibility, despite being among the least visible sites from land in the wider landscape. Dun Maraig, which was not included in the cumulative viewshed because the island it is located on is not depicted in the Ordnance Survey DEM, is now the site with poorest visibility of land. Dun Torvaig and Cnoc A'Sga, both size X oval enclosures classed as duns, have greatest land visibility within this distance (Figure 8.56). These two sites are in dominant positions overlooking valleys, and both enclose a large enough area that they may have been considered to be forts if the size classifications in the Argyll Inventories were applied – arguably Dun Torvaig may be an inland promontory fort, an east coast version of Dun Taimh on the other side of Skye, which also has good inland visibility. Dun Gerashader, another inland promontory fort, is situated within a kilometre of Dun Torvaig, and also has excellent vision of the valley that is today occupied by Portree. Of the size Z sites Dun Cruinn has the greatest visibility over the 5 km distance (Figure 8.55). The site's vision appears to be directed towards the lower-lying land surrounding Loch Snizort Beag, and its visibility of the landward approaches to the site, south across the headland on which it is placed, is poor (Figure 8.53 & 8.54). It would seem that visibility of the loch and its surroundings, or perhaps the numerous enclosed sites surrounding the loch, were of more importance to the occupants than vision of access routes to Dun Cruinn itself. There are a number of ostensibly suitable hills not far inland on which a defensive structure could be placed in order to have better vision of potential attackers from inland, and this may imply that defensibility is far from the most important consideration in its placement.

Figure 8.53: *Visibility inland (south) from Dun Cruinn, showing limited views. Potentially suitable hills for fort location with superior views inland are shown in the centre and right of the picture.*

Figure 8.54: *Visibility north towards Loch Snizort Beag from Dun Cruinn, showing excellent visibility in that direction.*

Over a 1 km radius there are some interesting contrasts in the visibility of various sites, compared to the 5 km distance. Over the shorter radius larger enclosures (size Z) are almost universally among the sites with the greatest visibility of their surroundings (Figure 8.57). When compared using a K-S test, the size Z sites had statistically significantly greater 1 km land visibility than size W, X and Y up to the 100th percentile, while the same test carried out over 5 km showed that the difference between the datasets over that radius was not statistically significant (Figures 8.60 & 8.61). It seems therefore that these larger sites are more favourably placed for local visibility than for vision over longer distances, with the possible exception of Dun Mor Struanmore and arguably Dun Cruinn (although the latter still has adequate 1 km visibility, just not in the direction from which it would be approached over land). To underscore this division between the largest sites and others, size Z sites have significantly greater 1 km visibility than the next ten largest up to the 100th percentile at a maximum difference *D* of 0.5000, which suggests a consistent, major difference between the datasets (Figure 8.62). Indeed the visibility of size X sites like Dun Taimh, Dun Liath and Dun Vallerain, while comparable with size Z over the 5 km distance, is relatively mediocre over 1 km (Figures 8.57 & 8.55). Dun Eyre and Meall an Duna, both of which had among the highest visibility over 5 km are, at best, average over the shorter distance.

No pattern is apparent among size W sites in Figure 8.57, and this is true of sites with or without complex architecture or outworks, shape of the enclosed area also making little difference (Figures 58 & 59). A group of six mostly oval sites of size X could be of interest, with all six sites having among the least visibility of land in the case study area over this radius – these sites were comparable to size W sites in their 5 km vision. This group of sites is largely comprised of coastal promontory enclosures, including Dun Vlargveg, Kraiknish and Dun Neill, and all have poor visibility directly inland (Figure 8.58). It is potentially significant that these sea-girt promontory sites occupy the gap in terms of size between examples of enclosed sites considered of roofable size and the smaller hilltop enclosures, the smallest of which, Cnoc A'Sga and Druim nan Slochd, at 372 m^2 and 380 m^2 respectively, both have excellent landward visibility. This may be indicative of a fundamental distinction between site size S in northern Skye, with a gap in internal area between inland roofable sites and unroofable enclosures of a domestic nature being filled by a series of coastal promontory enclosures. The measurement of the actual activity area within these promontory sites may be difficult to discern accurately, and most of them are isolated from other sites. A similar distinction may be present in Kintyre, at a slightly larger size, with sites under 250 m^2 notably more likely to be centrally located with respect to higher quality farming land than the sites that are just slightly larger (Table 7.2; Figure 7.72 & 7.73). Thus a clearer-cut size division may exist among the datasets in both case study areas, if marginal or promontory sites are removed from the analysis.

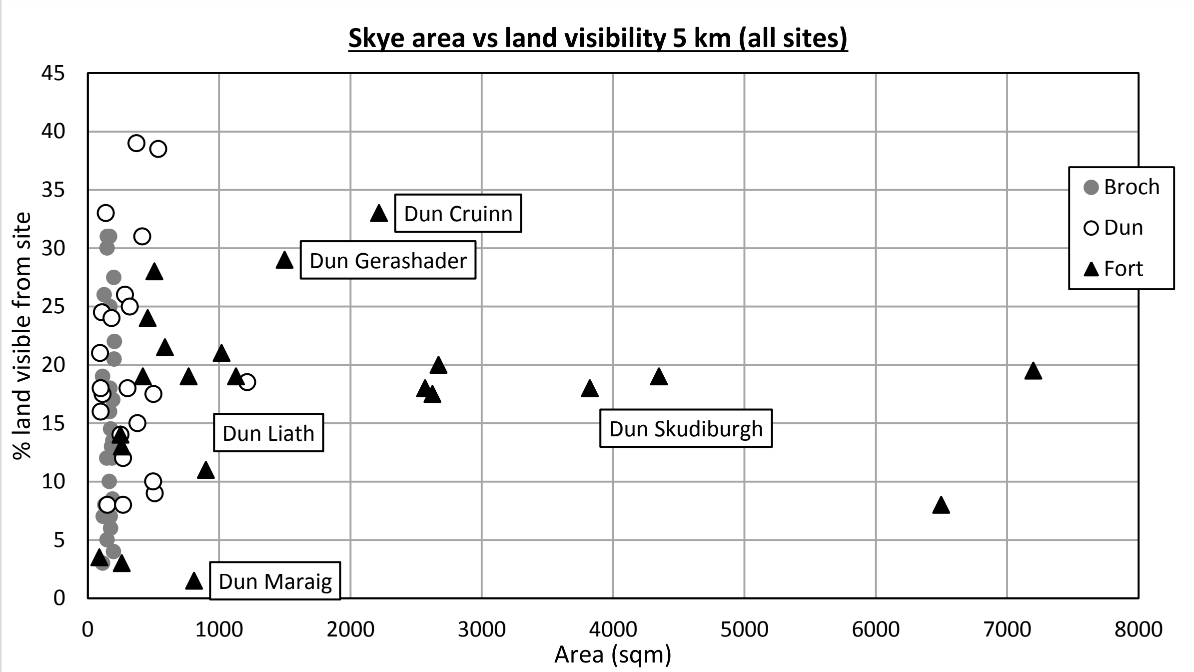

Figure 8.55*: The percentage of land visible from sites within 5 km. Sites with significant differences from the cumulative viewshed analysis (Figures 8.44 & 8.45) are noted.*

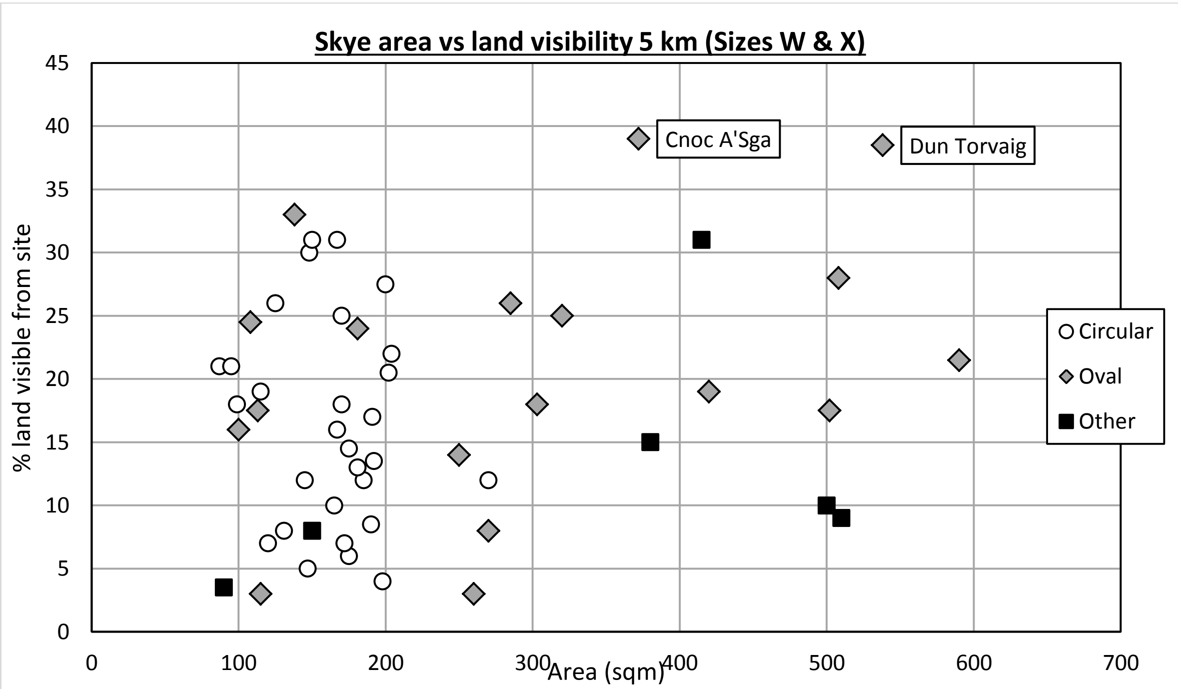

Figure 8.56*: The percentage of land visible from sites within 5 km, categorised by shape of enclosure.*

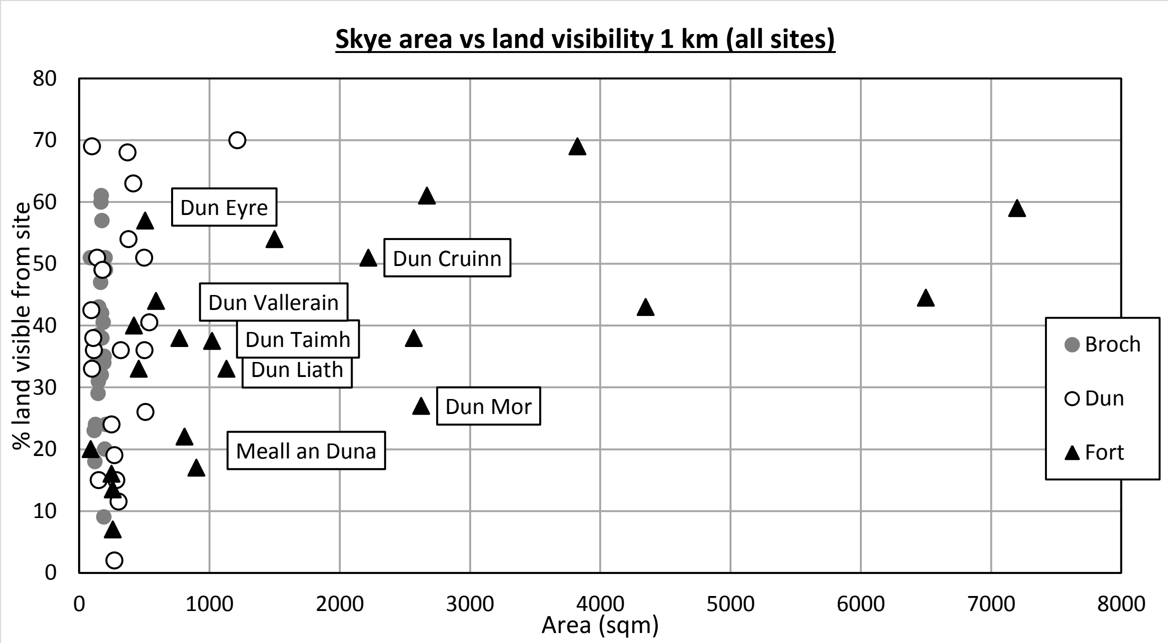

Figure 8.57: *The percentage of land visible from sites over a 1 km distance. Size Z sites almost all have high visibility (>40%) of their 1 km radii, while for many size W, X and Y sites that is not the case. Size X sites had comparable or greater visibility of their 5 km radii (Figure 8.55) when compared to Size Z, but that is not true over 1 km.*

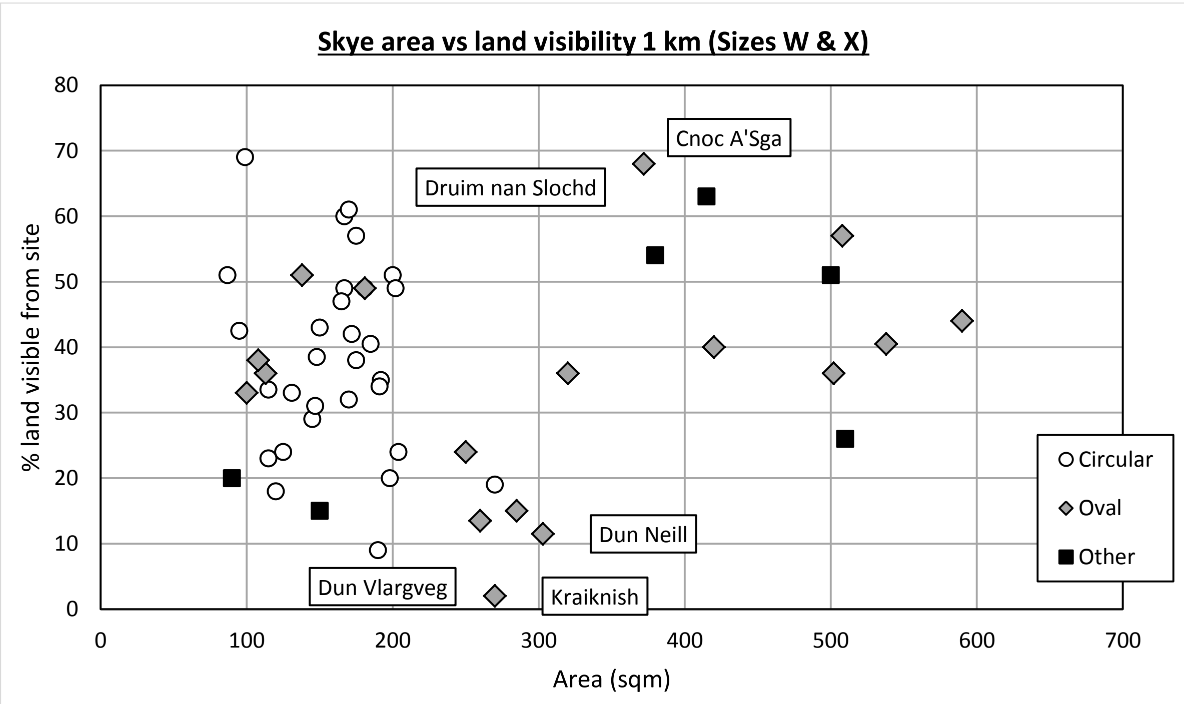

Figure 8.58: *The percentage of land visible from sites within 1 km categorised by shape of enclosure. There is a group of smaller* size X sites with exceptionally poor inland visibility, a significant contrast with named sites just slightly larger.

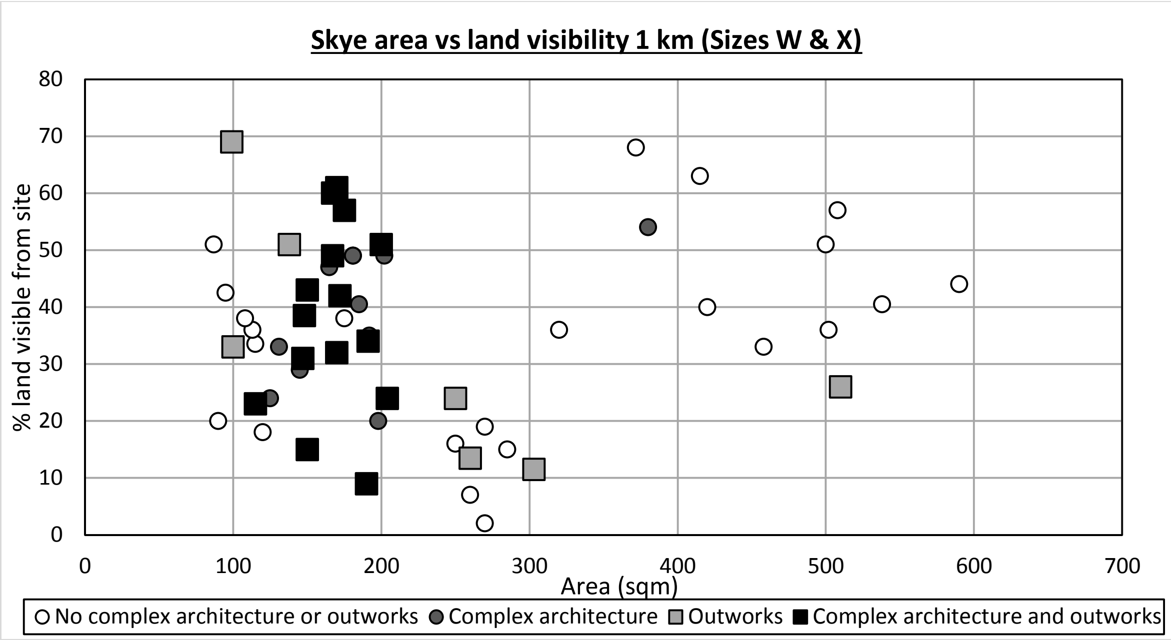

Figure 8.59: *The percentage of land visible from sites within 1 km categorised by presence of architectural features. There is no apparent pattern related to outworks or the presence of complex architecture.*

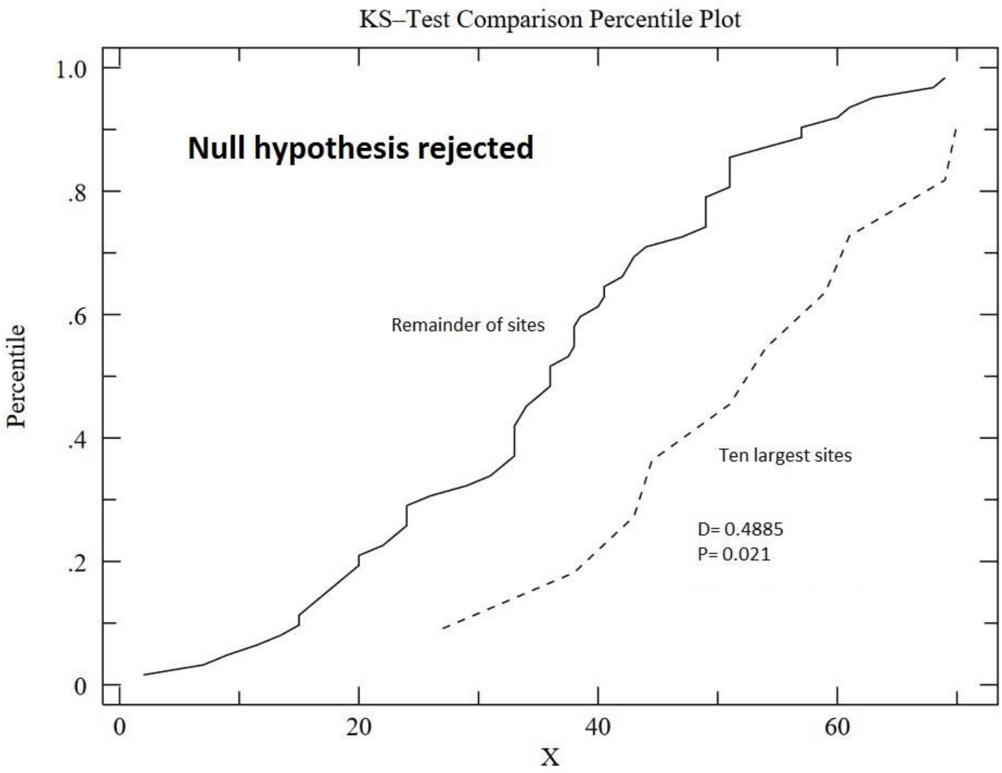

Figure 8.60: *K-S test comparing the visibility of land from size Z sites with the remainder of sites over a 1 km radius. The size Z sites are very likely to have greater visibility of their surrounding 1 km.*

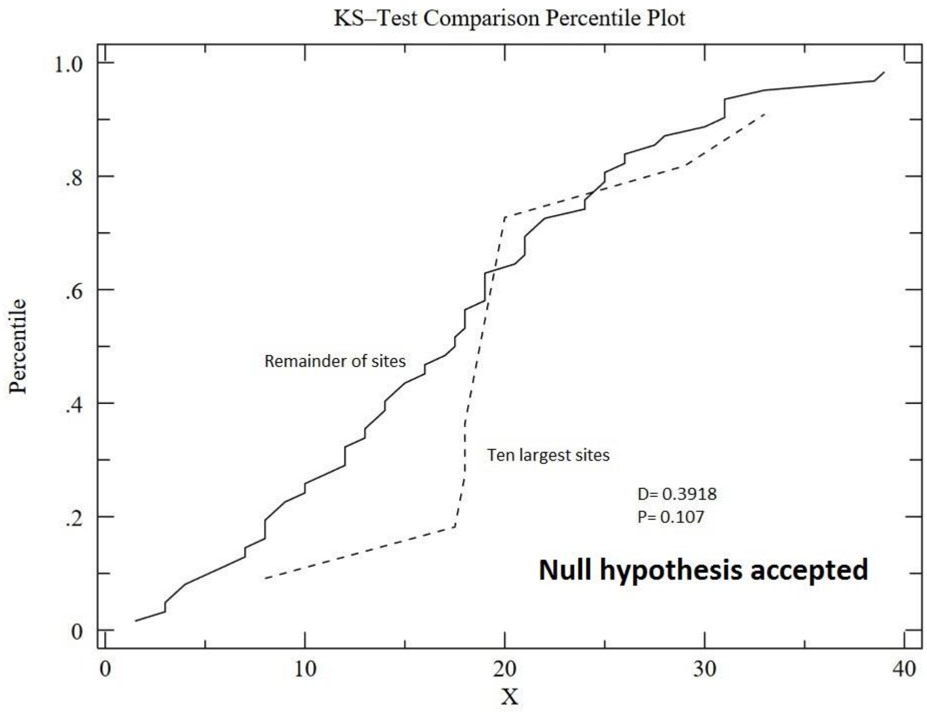

Figure 8.61: *K-S test comparing the visibility of land from size Z sites with all size W, X and Y sites over a 5 km radius.*

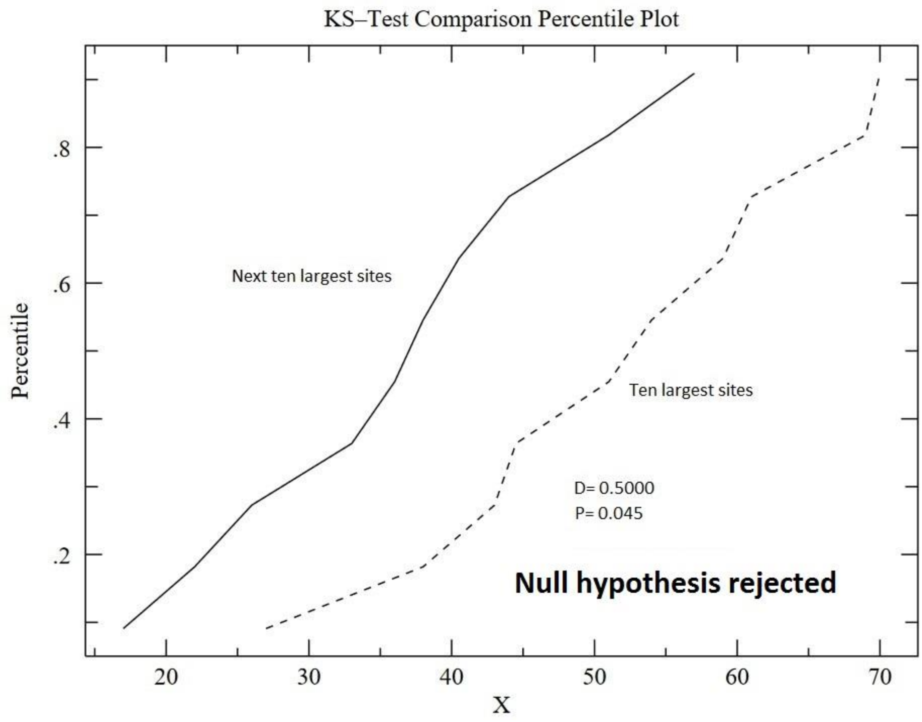

Figure 8.62: *K-S test comparing the visibility of land from size Z sites with the next ten largest sites over a 1 km radius. The size Z sites are strongly likely to have greater visibility of land over that distance.*

8.2.5 Proximity to agricultural land

Previous authors have commented that Skye brochs are restricted to the northern half of the island due to most of the better farming land being in that region (e.g. MacSween 1985, 31; Armit 1996, 113). Examination of the map (Figure 8.63) would suggest that in the case study area there is a broad correlation between distributions of all drystone enclosed sites and land that today is considered to be of value for grazing or arable use. The greatest concentrations of sites, particularly those classed as forts and brochs, are around Lochs Greshornish and Snizort Beag in the north and Lochs Bracadale and Harport in the west. These are among the largest areas of fertile land in Skye today. Almost no sites survive on the restricted areas of land rated 4.2 or better in northern Skye, and this may conceivably be the original distribution of enclosed sites – favouring rocky knolls adjacent to but not on the best farming land. Equally it may be a consequence of modern land improvement, with sites once present now eliminated on the surface. There are regions where the relationship between agricultural land and enclosed sites is slightly less convincing, such as the north east coast of Trotternish, where there is a large number of sites for a smaller area of agricultural land, and at the head of Loch Harport, where there is just one site (Dun Merkadale) near what is now quite a fertile valley. It is, however, probable that much of the unevenness in correlation between sites and farming land is due to differential patterns of modern land improvement.

Indeed, the mouth of Loch Harport lacks farms on Blaeu's 1654 map of Skye (See Appendix 2), while on the Trotternish peninsula settlement is widespread. The post-medieval distribution of settlement, which is likely to represent the pre-Improvement quality of farming land, may reflect prehistoric settlement patterns more closely than modern land classifications. However, the imperfections of this method are underscored by Loch Bracadale and the mouth of Loch Harport also lacking settlement on Blaeu's map – both are intensively settled compared to the rest of Skye today and seem to have been in prehistory also. It is possible that certain areas on Skye were less intensively visited than others by Timothy Pont, who carried out the mapping in the 1580s or 1590s. Certainly Lochs Bracadale and Harport, as well as the Trotternish peninsula, are all ringed by settlement on Thomson's 1832 map (APPENDIX X), which probably captures the density of the latest pre-Clearance population of the island.

On average, 22% of land within 5 km of sites in the case study is agricultural land compared to 15% of land in the case study area as a whole (Table 8.2). A 5 km radius comprises a large proportion of a case study area that is a maximum of 45 km by 38 km in size. It must be expected that any point in the landscape would have some agricultural land within 5 km, given the distribution of such land along most of the coasts and valleys in northern Skye. Thus any deviation, however small in proportional terms, above or below the average value for the region may be of significance. Table 8.2 shows that size W and Z sites have both the largest percentage and most area of agricultural land within 5 km, while size X sites have comfortably the lower percentage and least area of such land. Sites classed as brochs form quite a close group in Figures 8.64 & 8.65, with between 15% and 30% of land within 5 km of almost all brochs and duns classed as agricultural land by the norms in use here. Size Z sites also follow this pattern (Figure 8.64), with size X and Y sites slightly more likely to fall outside this range (Figures 8.64 & 8.65). The difference between brochs and duns in this respect within 5 km is not statistically significant (Figure 8.67), however size W sites do differ from size X sites, with the former approximately statistically likely to have more agricultural land within this radius (Figure 8.68). It therefore appears that sites of roofable size and the largest hilltop enclosures classed as forts are more centrally placed in relation to agricultural land than sites that are intermediate in terms of the size of their enclosed area.

Type	**% of 5 km land**	**Area of**	**% of a 1 km land**	**Area of**

	surroundings that is agricultural land (average)	agricultural land within 5 km (m^2) (average)	surroundings that is agricultural land (average)	agricultural land within 1 km (m^2) (average)
Total case study area	15.1		15.1	
All sites	22	11301887	41.5	936936
Brochs	22.6	11894310	41.7	1001018
Duns	20.7	10656328	38.9	891900
Forts	22.4	11220381	44	903325
Size W	22.7	11865949	41.1	965030
Size X	18.8	9592990	40.1	868539
Size Y	30	10916935	43.1	788642
Size Z	24.4	12943244	46.8	959881

Table 8.2: *The average area of agricultural land within 5 km and 1 km and the percentage of land within that radius that is comprised of agricultural land.*

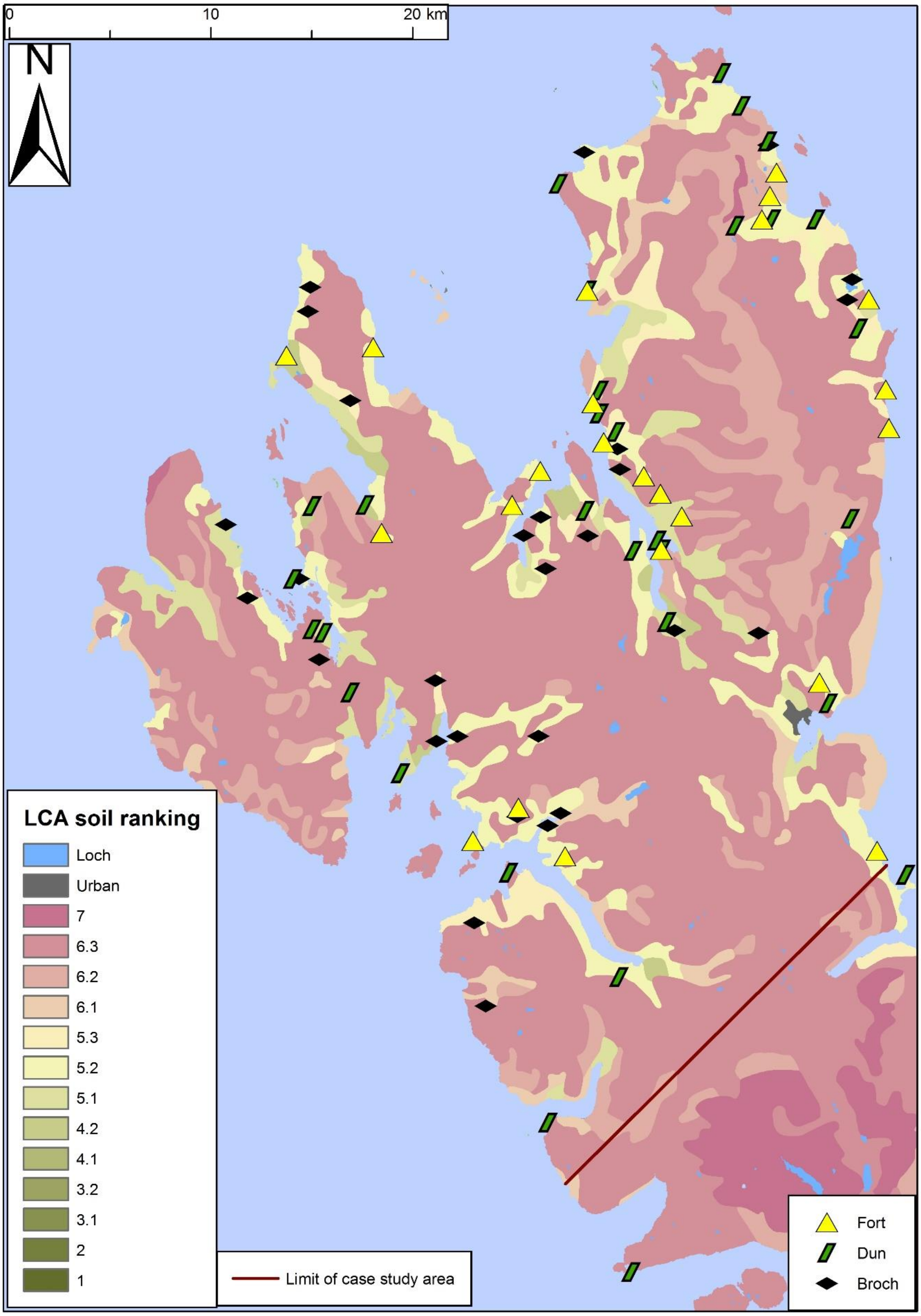

Figure 8.63: *Enclosed sites in northern Skye overlaid on National Soil Survey Land Capability for Agriculture mapping.*

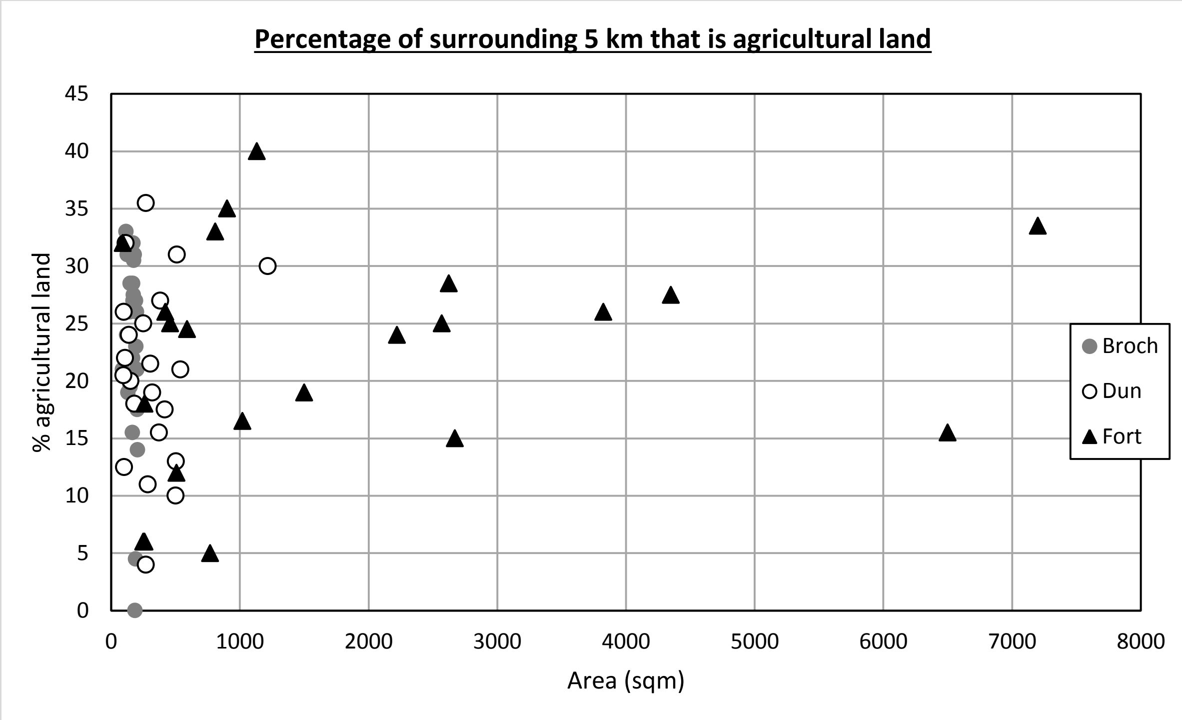

Figure 8.64: *The percentage of the 5 km radius of each enclosed site that is agricultural land. Brochs and large enclosures clustered between 15-35%. Size X and Y sites are more likely to be outside this range.*

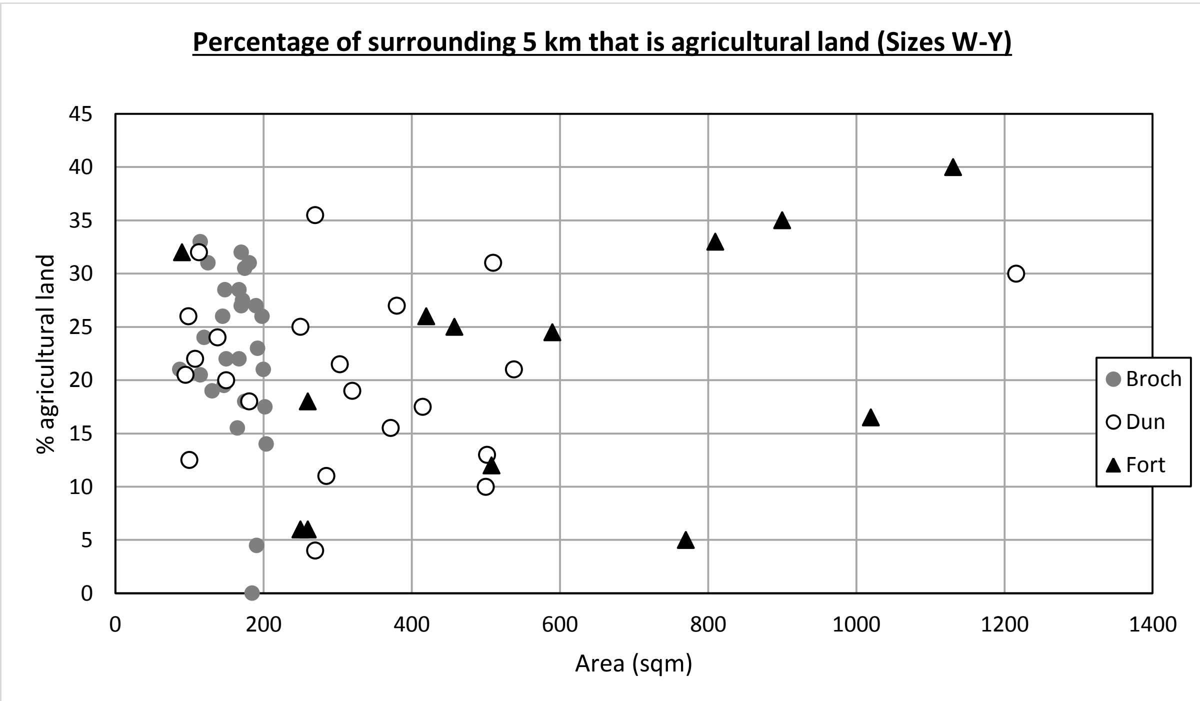

Figure 8.65: *The percentage of the 5 km radius of each enclosed site that is agricultural land. Brochs/ size W sites are clustered together, while size X and Y sites are more spread out.*

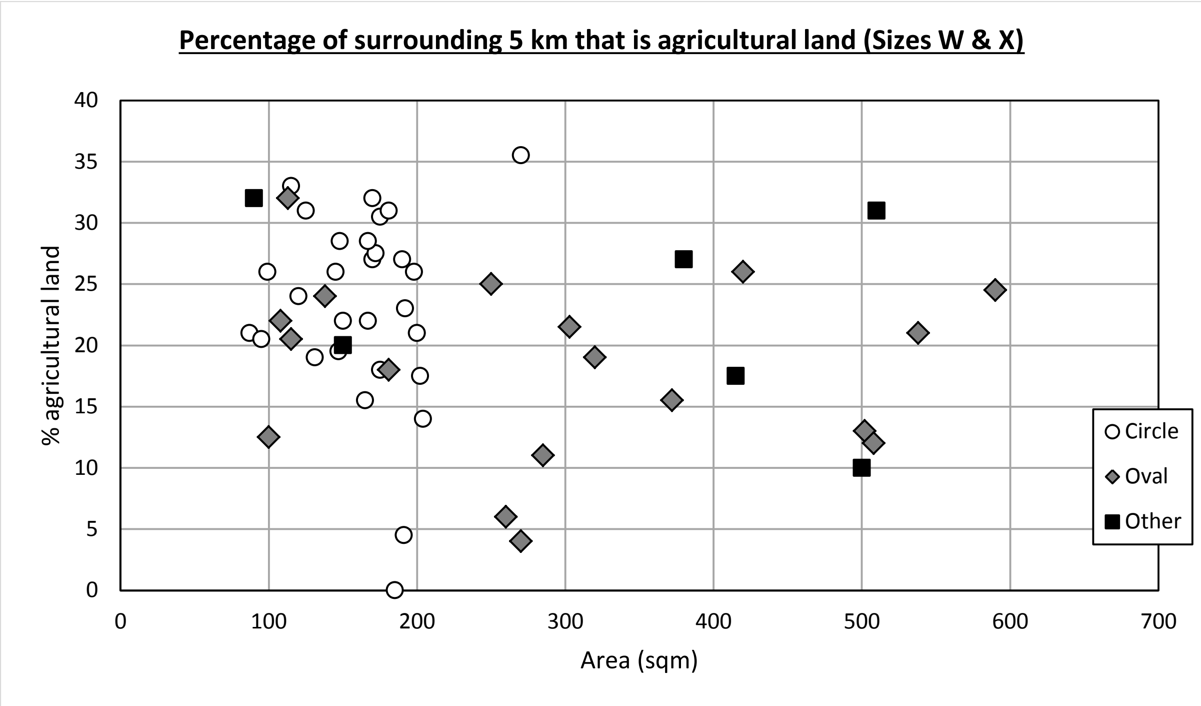

Figure 8.66: *The percentage of the 5 km radius of each enclosed site that is agricultural land, categorised by shape of enclosure. The homogeneity of size W sites is particularly evident, both in size and the percentage of agricultural land within 5 km.*

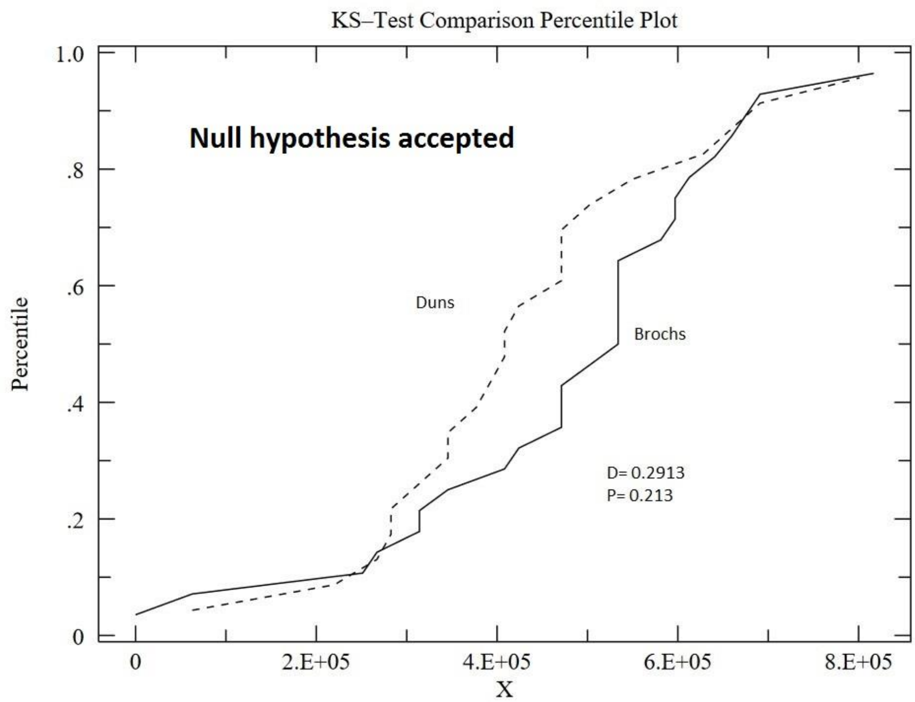

Figure 8.67: *K-S test comparing the area of agricultural land within a 5 km radius of sites classed as duns and brochs.*

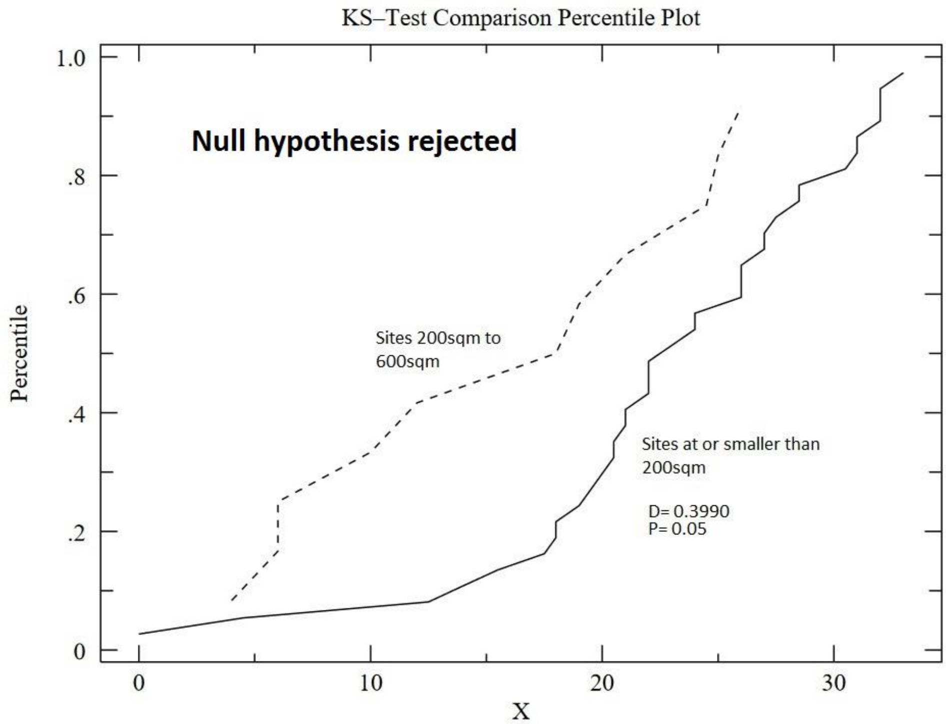

Figure 8.68*: K-S test comparing the area of agricultural land within a 5 km radius of size W sites with size X sites. Size W sites have more agricultural land within that distance.*

Within a 1 km radius, the variation between both site classes and individual sites becomes more pronounced. The positive relationship between enclosed sites and agricultural land becomes more apparent, with the latter making up 41.5% of sites' surroundings (Table 8.2). While size Z sites have a high percentage of agricultural land nearby, it is brochs and size W sites that have the greatest square meterage of that land within 1 km – this is probably due to many of the larger forts being on the coast, and simply having less land nearby, with brochs more likely to be slightly inland. Sites classed as forts or brochs are likely to have more favourable farming land nearby than duns, notably sites of size X (many of which are classed as duns). Almost all sites in the case study area have a higher percentage of agricultural land nearby than the 15.1% figure for the region as a whole that is comprised of better land (Figure 8.69). This positive relationship remains even if comparison is made with only lower-lying land – favourable farming land comprises 23.3% of land below 175 m OD. This is despite parts of the 1 km radii of sites themselves being comprised of higher ground, i.e. the surroundings of sites, which contain high ground, are being measured against land that due to its altitude is more likely to be suitable for agriculture.

Furthermore, most sites have a higher percentage of agricultural land within 1 km than within their 5 km radii (Figure 8.69 & 8.70; Figure 8.64 & 8.65), which is strong evidence for enclosed sites being positioned with proximity to such land in mind. It is therefore apparent that all classes and sizes of site, and a majority of individual sites, seem to be placed with more agricultural land nearby than one would expect if that land was of no interest or importance to the occupiers.

Agricultural land makes up at least a quarter of land within 1 km of size Z sites, except for the fort at Annait (Figure 8.69). Dun Santavaig and Ullinish (see Figure 8.80) – both large coastal enclosures – are almost completely surrounded by favourable farming land. As are some of the prominent inland promontory forts like Dun Gerashader (Figure 8.76) and Dun Taimh (Figure 8.71). Many smaller sites show similar patterns – the tiny coastal promontory of Dun Neill protruding into Loch Bracadale has nothing but agricultural land up to 1 km inland (Figure 8.72), and this is also true of the coastal brochs of Dun Fiadhairt in Duirinish and Dun Bornaskitaig in the far north of Trotternish (Figures 8.70 & 8.83). A heavily degraded size X enclosure at Balmeanach in Trotternish has the largest area of nearby agricultural land. There are, however, enclosed sites that seem to share morphological and architectural characteristics with these, but which have almost no favourable farming land nearby. Dun Sleadale is a broch near Talisker in Minginish that today has only peat moorland within 1 km (Figure 8.70). A broch in Glen Heysdal near Duirinish has no agricultural land nearby (Figure 8.70), but the remains of post-medieval field boundaries around the site indicate that the area may have been considered less marginal in the past (Figure 8.84). These examples do suggest, however, that there is no straightforward relationship between sites that were classed as brochs by MacKie and MacSween and the best land in Skye. Some such sites were placed in what are likely to have been more marginal areas in agricultural terms, and this may support theories that there were hierarchies between Atlantic Roundhouses/brochs, rather supporting the hypothesis that they were all the homes of elites.

Over a 1 km distance size W sites do not have a statistically higher proportion of favourable farming land nearby than size X sites (Figure 8.74), which is different to the 5 km radius (Figure 8.68). Size Z sites also do not differ statistically from sizes W and X in this regard. Similarly, sites classed as brochs and sites classed as duns appear to be drawn from the same dataset (Figure 8.75).

The evidence overwhelmingly points towards all drystone enclosed site types in northern Skye having a broadly positive relationship with favourable land over the 1 km distance, and all were likely to be structures that were involved with exploiting that land in some way, with individual exceptions. There are greater variations between, for example, sites of roofable size and slightly larger structures, or individual sites within the class of brochs, for example, over the 5 km radius compared to 1 km, and this may reflect hierarchies between sites, with the most important having access to or control over a greater hectarage of favourable land. Equally, size X enclosures, located in 5 km-radius sectors with less farming land, may have been temporary, seasonal sites, occupied to exploit isolated areas of agricultural land. These enclosures may also reflect periods in which more outlying areas had to be farmed, due to an expansion in population or lack of productivity of the land customarily used for higher quality pasture or arable – they may thus represent a chronological horizon. Many of these sites of intermediate size are very prominent, like Cnoc A'Sga and Dun Connavern, or coastally located, often on promontories, like Dun Neill and Dun Vlargveg and they mostly appear to be structures that are using natural topography as a defence. Their coastal location may explain the relatively high percentage of farming land within 1 km, as there are narrow bands of agricultural land along much of the coast in the case study area. The increased relative difference between the largest enclosures (size Z) and other site types in terms of hectarage of farming land over the 5 km distance compared to 1 km may be indicative of central positioning of such sites, of their particular importance in agricultural production or of their controlling position in later prehistoric society, being large, relatively prominent and located in regions with the largest area of favourable land.

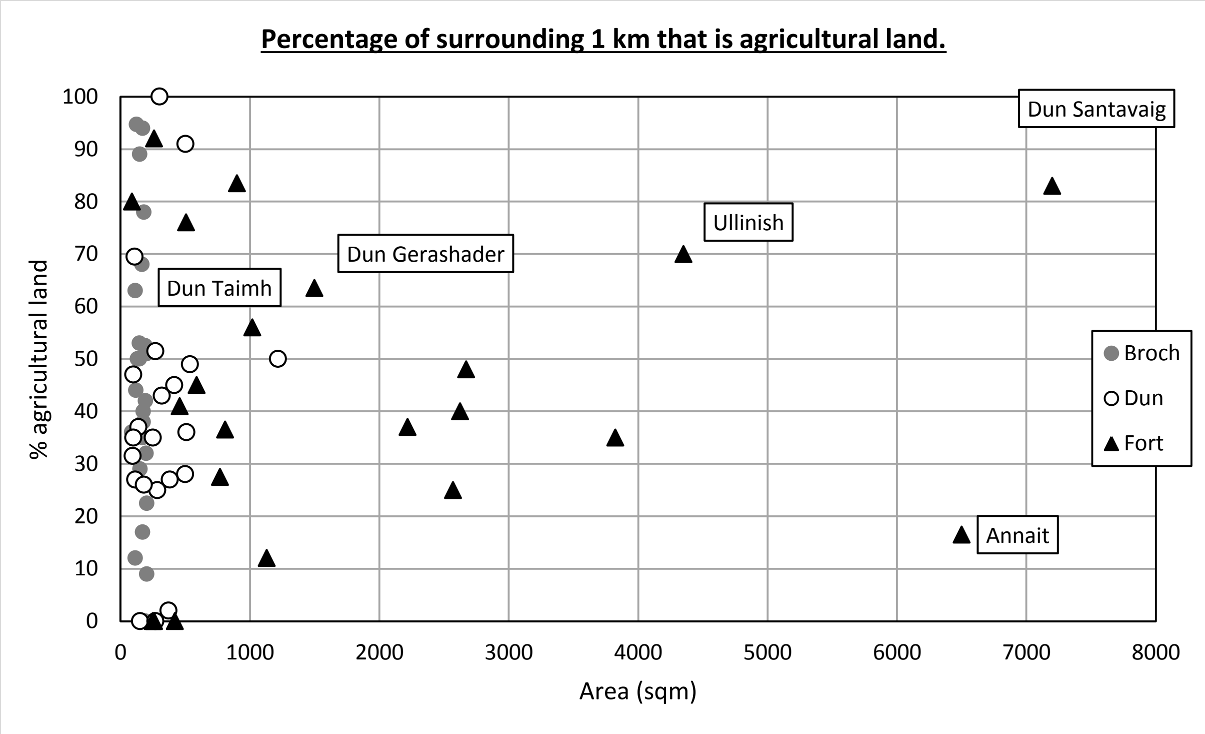

Figure 8.69: *The percentage of the 1 km radius of each enclosed site that is agricultural land. Shows that most sites have a higher proportion nearby than the 15.1% percentage for northern Skye as a whole.*

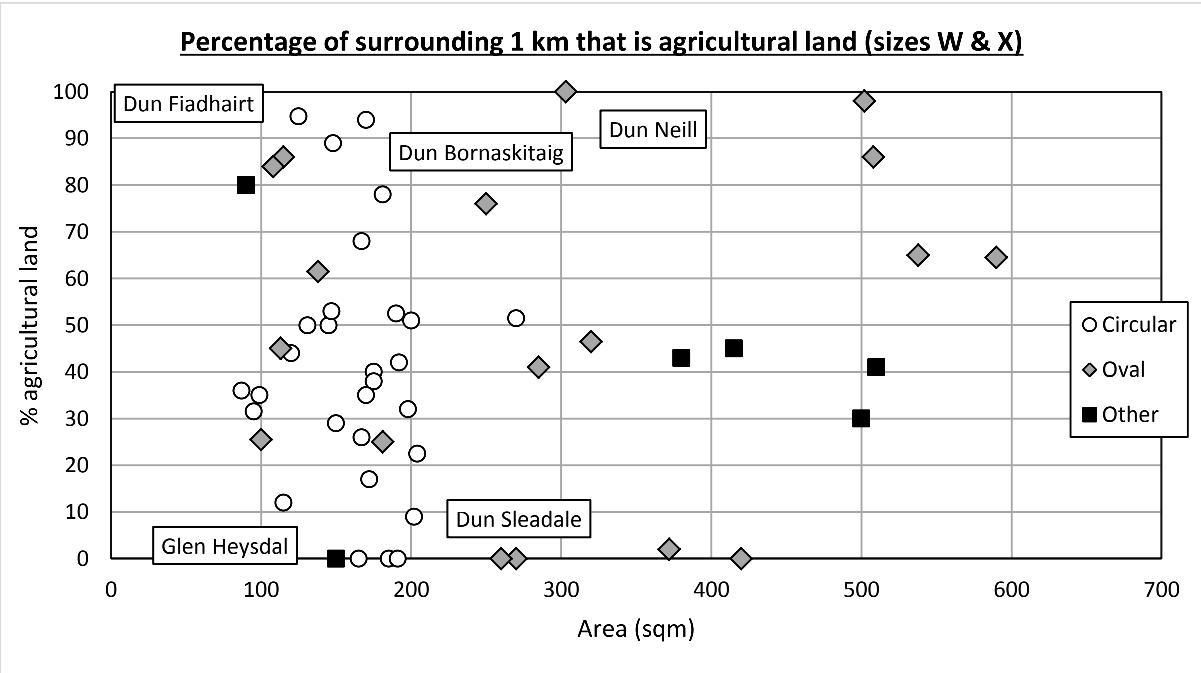

Figure 8.70: *The percentage of the 1 km radius of each enclosed site that is agricultural land, categorised by shape of enclosure. No overall pattern is discernible.*

Figure 8.71: *Dun Taimh, facing north, showing its landscape position relative to agricultural land (back centre and back right). Loch Bracadale is on the left.*

Figure 8.72: *Photograph taken from the interior of Dun Neill, looking east towards area of agricultural land.*

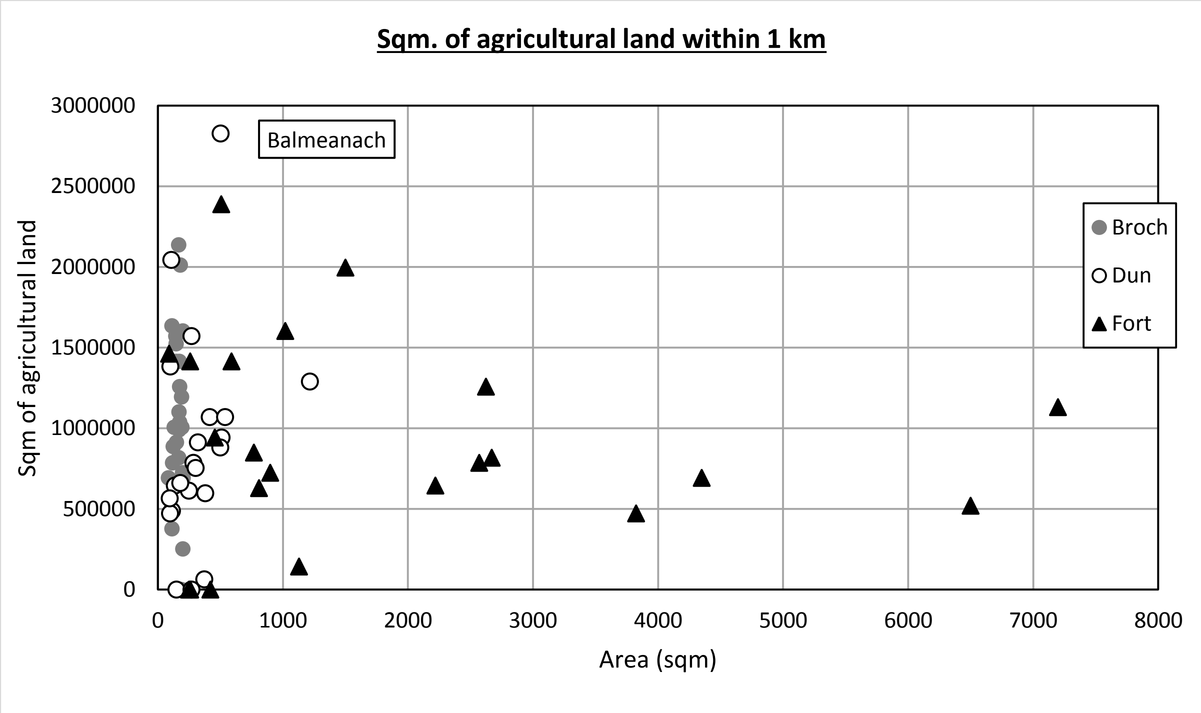

Figure 8.73: *The area of agricultural land within 1 km of each enclosed site.*

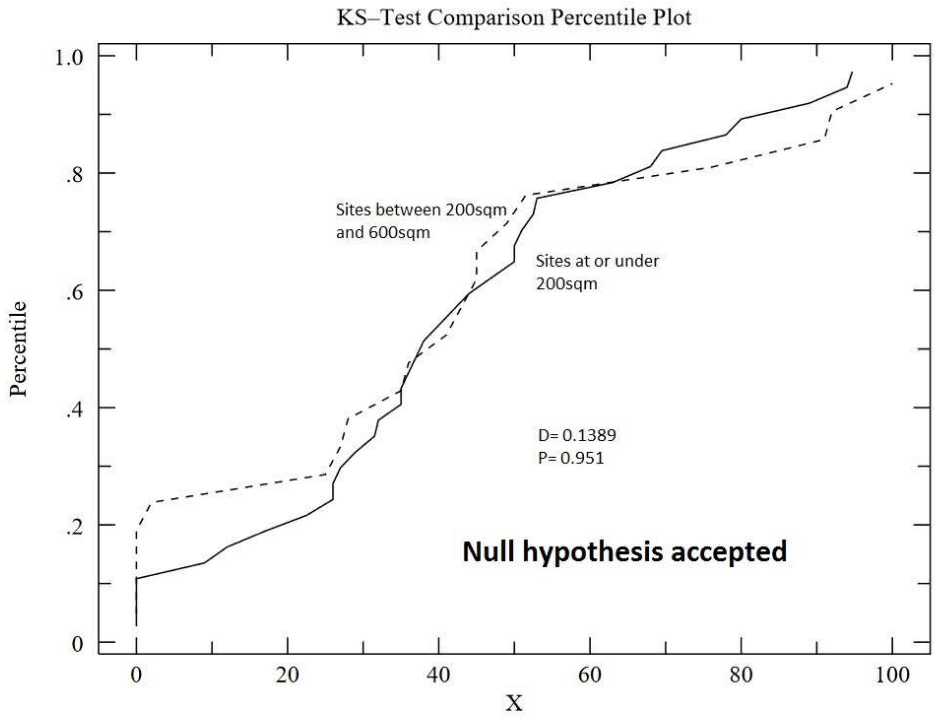

Figure 8.74*: K-S test comparing the percentage of surrounding land that is agricultural within a 1 km radius of size W sites with size X sites. This indicates that there is little difference between the classes.*

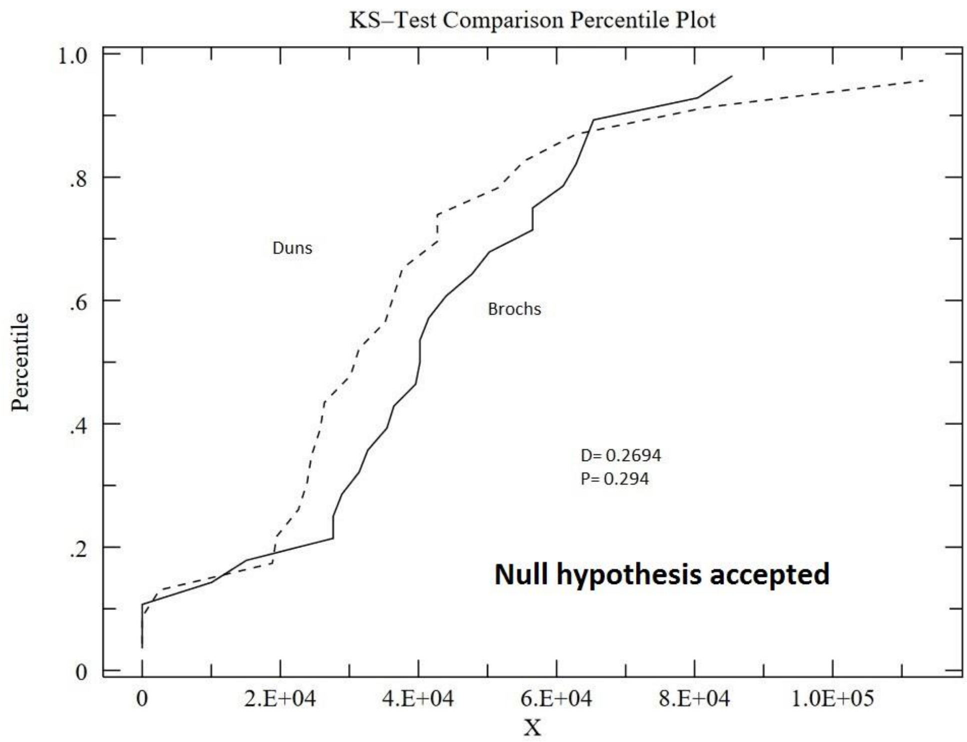

Figure 8.75*: K-S test comparing the area of agricultural land within a 1 km radius of sites classed as duns and brochs.*

8.2.6 Visibility of agricultural land.

Sites have visibility to more extensive tracts of agricultural land than one might expect, when compared to the area of that quality of land that is present close to them. The 5 km viewsheds of sites are comprised of a higher proportion of agricultural land (24.7%) than the 5 km surroundings of sites (22%) (Table 8.2 & 8.3).

Enclosures classed as forts have a higher percentage of agricultural land in their 5 km viewsheds than duns, with differences also apparent among size categories between size Y/Z sites and size X sites (Table 8.3 & Figure 8.83). This is in line with the relative differences between site categories discernible in the analysis of proximity of that land apparent in Table 8.2, although variation between site categories is not as pronounced for visibility as for proximity analyses. When subjected to a Kolmogorov-Smirnov test, sites classed as forts do not differ to a statistically significant degree from duns in the percentages of their viewsheds taken up by agricultural land (Figure 8.84), while this is the same for brochs and forts, and duns and brochs. There is also not a statistically significant difference between size Z sites and size W in this regard (Figure 8.85; Figure 8.86). Sites classed as brochs have visibility of the lowest area of agricultural land over a 5 km distance (Table 8.3). Perhaps surprisingly, sites classed as duns and size X sites have vision of at least 30 ha more agricultural land than brochs at this distance, despite having less agricultural land within 5 km (Table 8.2). Like the visibility of size Z sites, duns and size X sites have slightly higher 5 km visibility of the landscape than brochs (Figure 8.87), and this makes up, in terms of hectarage of visible farming land, for a lower proportion of that visibility being made up of agricultural land.

Type	**% of land visibility that is agricultural land 5 km (average)**	**Area of agricultural land visible 5 km (m^2) (average)**	**% of land visibility that is agricultural land 1 km (average)**	**Area of agricultural land visible 1 km (m^2) (average)**
All sites	24.7	2380907	47.3	422228
Brochs	25.4	2152480	49.5	442629
Duns	21.8	2569425	46.9	413034
Forts	26.8	2472732	45	406386
Size W	25	2320918	48.4	425782
Size X	22.3	2411582	46.3	389188
Size Y	30	1585704	43.5	310822
Size Z	26.1	2984878	47.2	531218

Table 8.3: *The percentage of sites' landward viewsheds that is agricultural land and the area of agricultural land visible within 5 km and 1 km radii.*

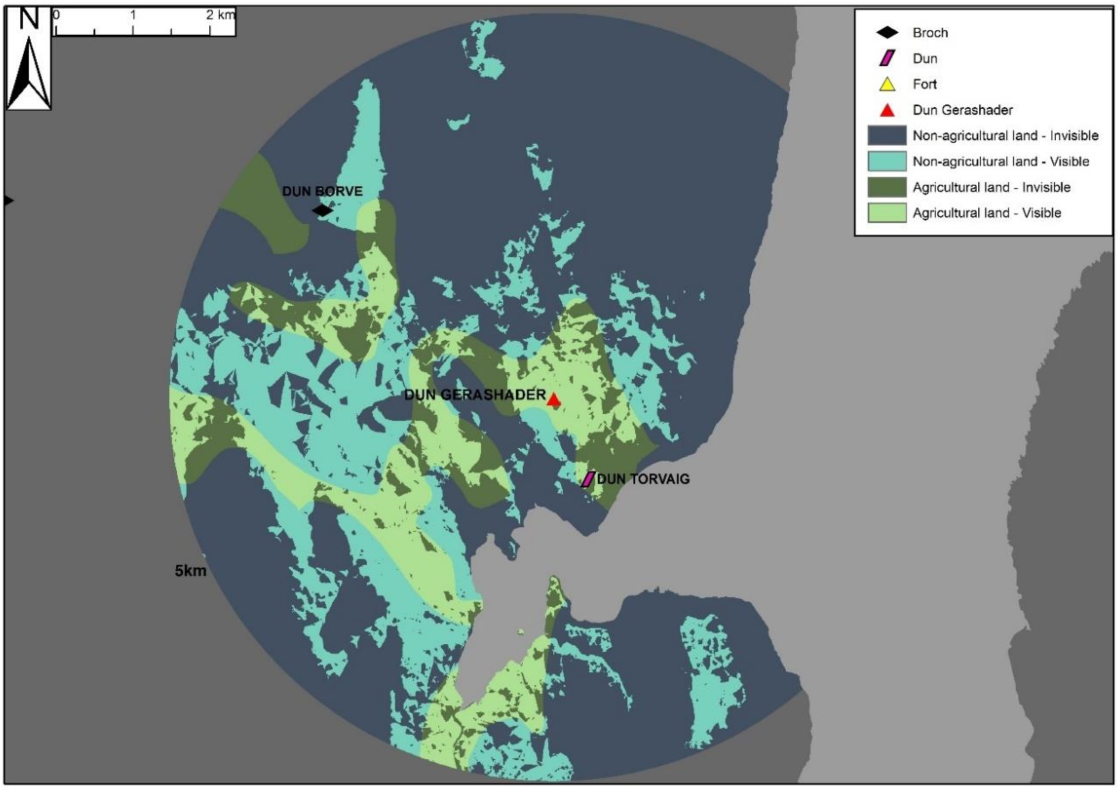

Figure 8.76: *5 km visibility of agricultural land from Dun Gerashader (size Z fort).*

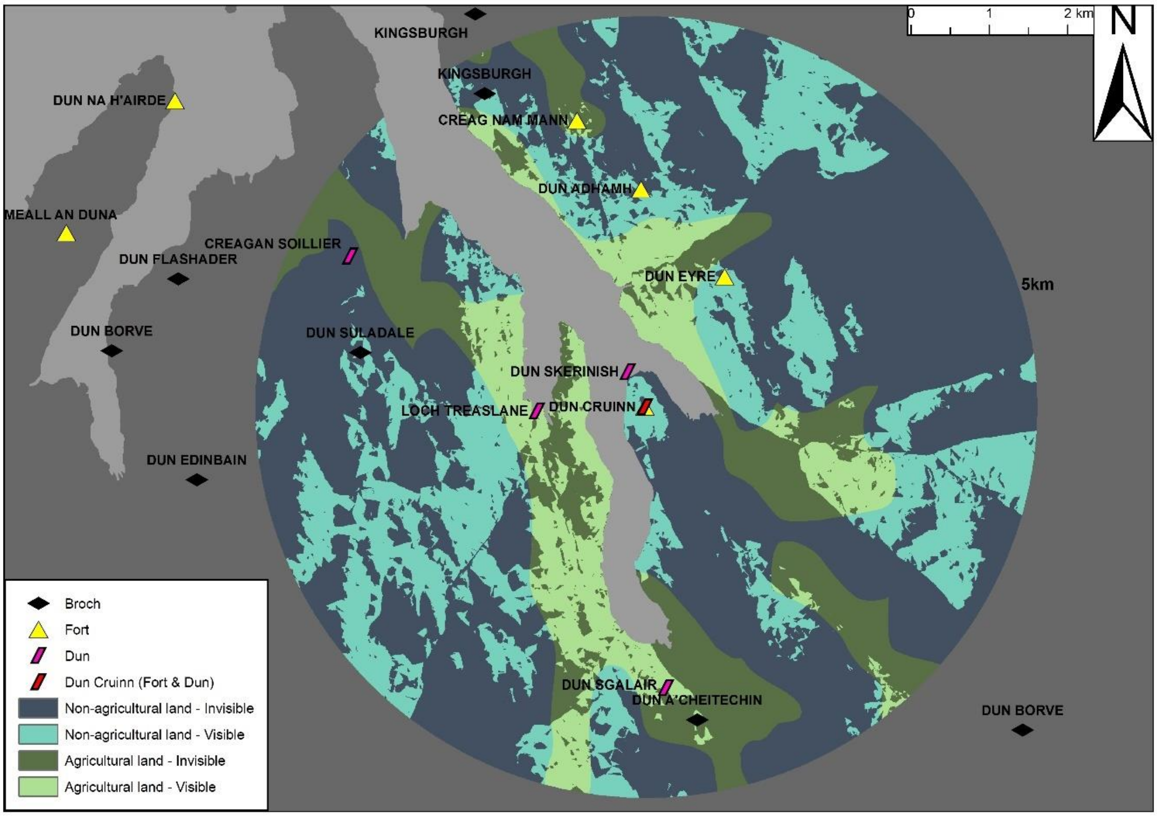

Figure 8.77: *5 km visibility of agricultural land from Dun Cruinn (size Z fort & size W dun).*

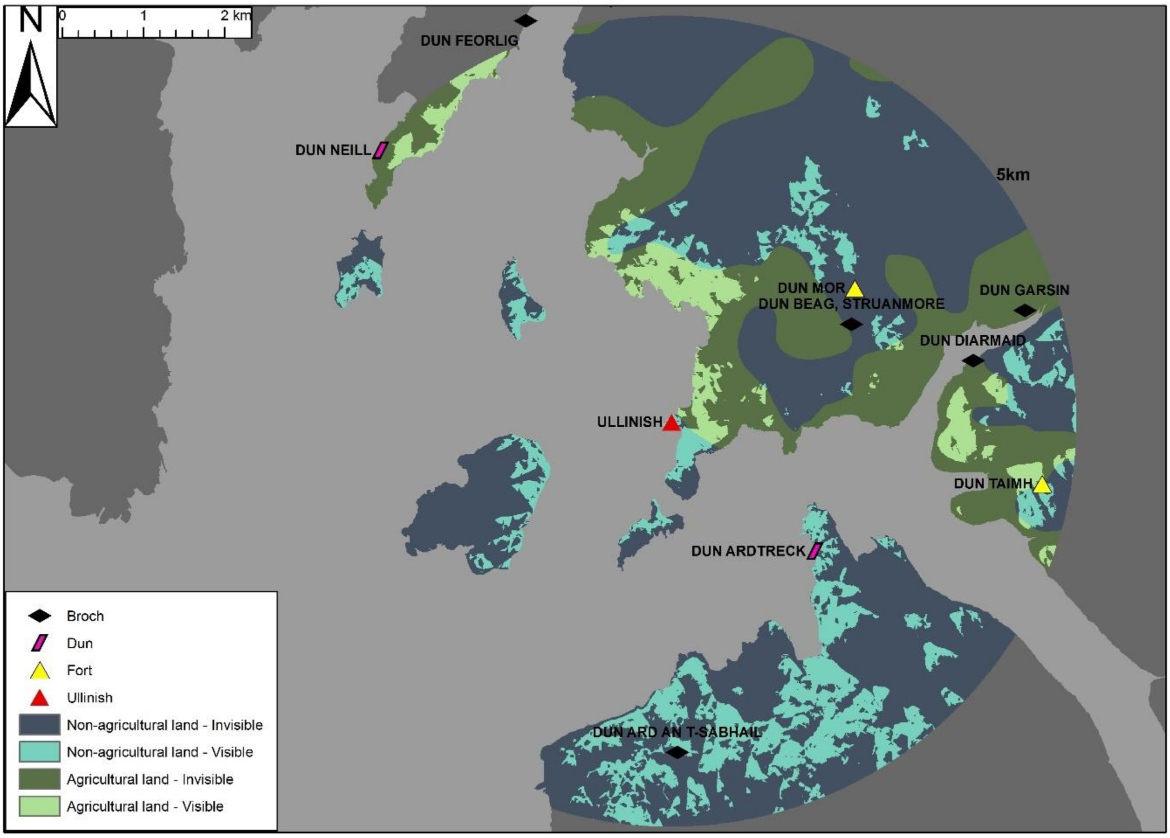

Figure 8.78: *5 km visibility of agricultural land from Ullinish (size Z promontory fort).*

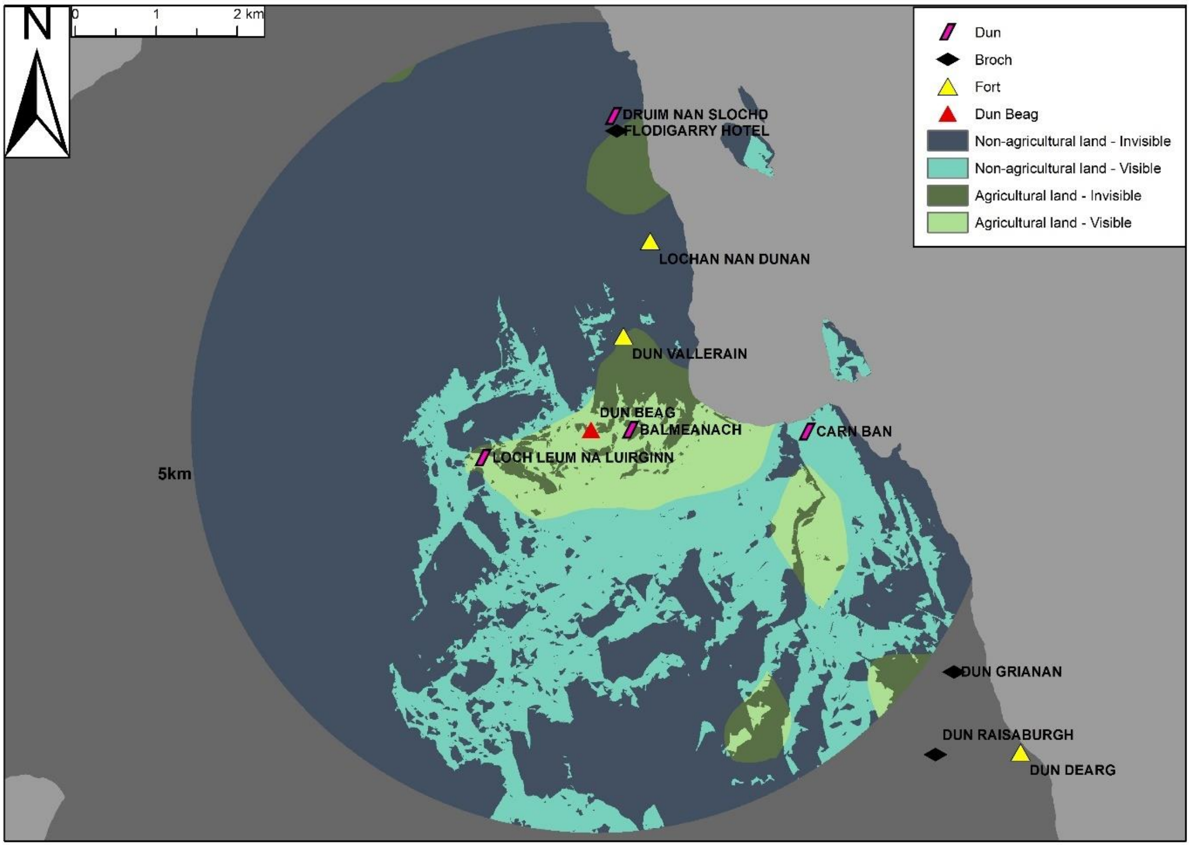

Figure 8.79: *5 km visibility of agricultural land from Dun Beag Balmeanach (size X fort).*

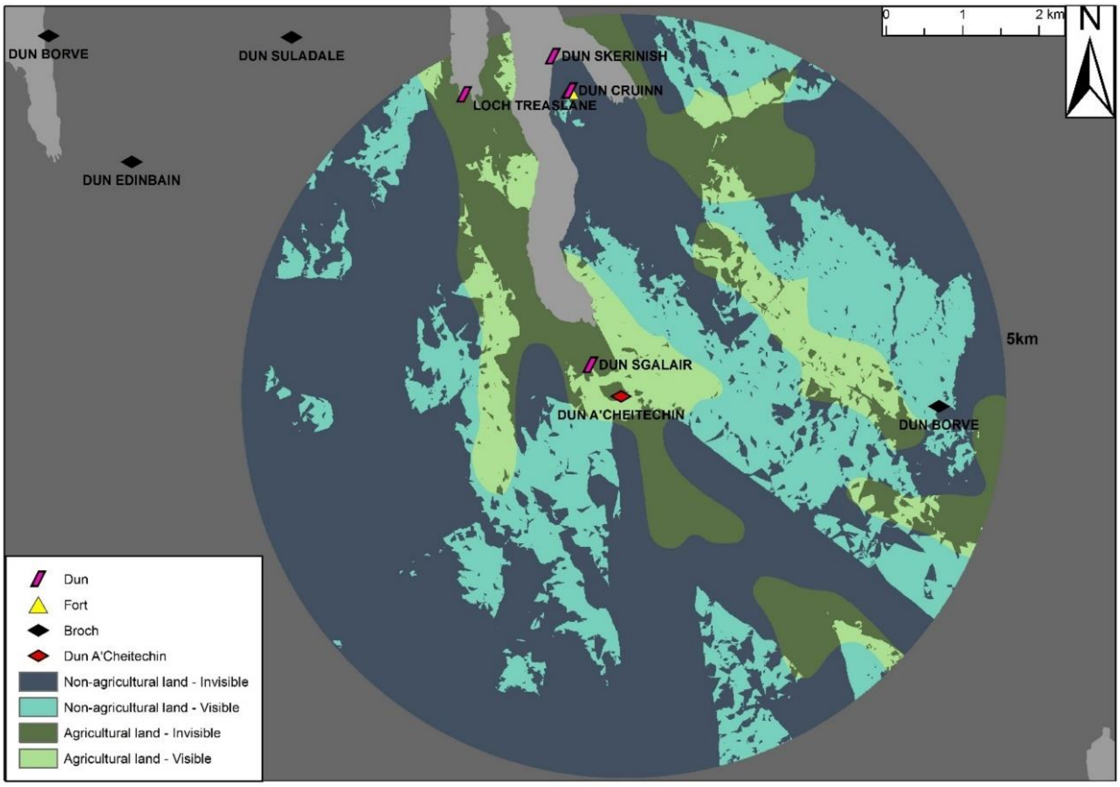

Figure 8.80: *5 km visibility of agricultural land from Dun A'Cheitechin (size W broch).*

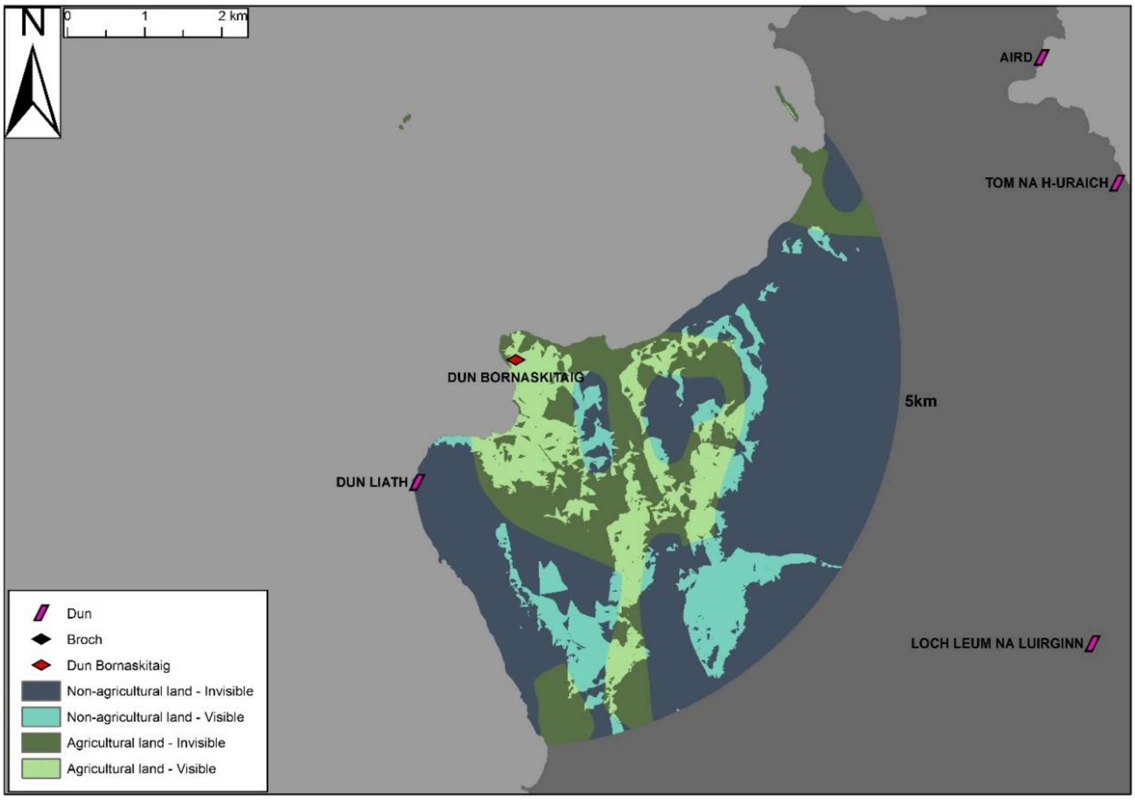

Figure 8.81: *5 km visibility of agricultural land from Dun Bornaskitaig (broch or Atlantic Roundhouse).*

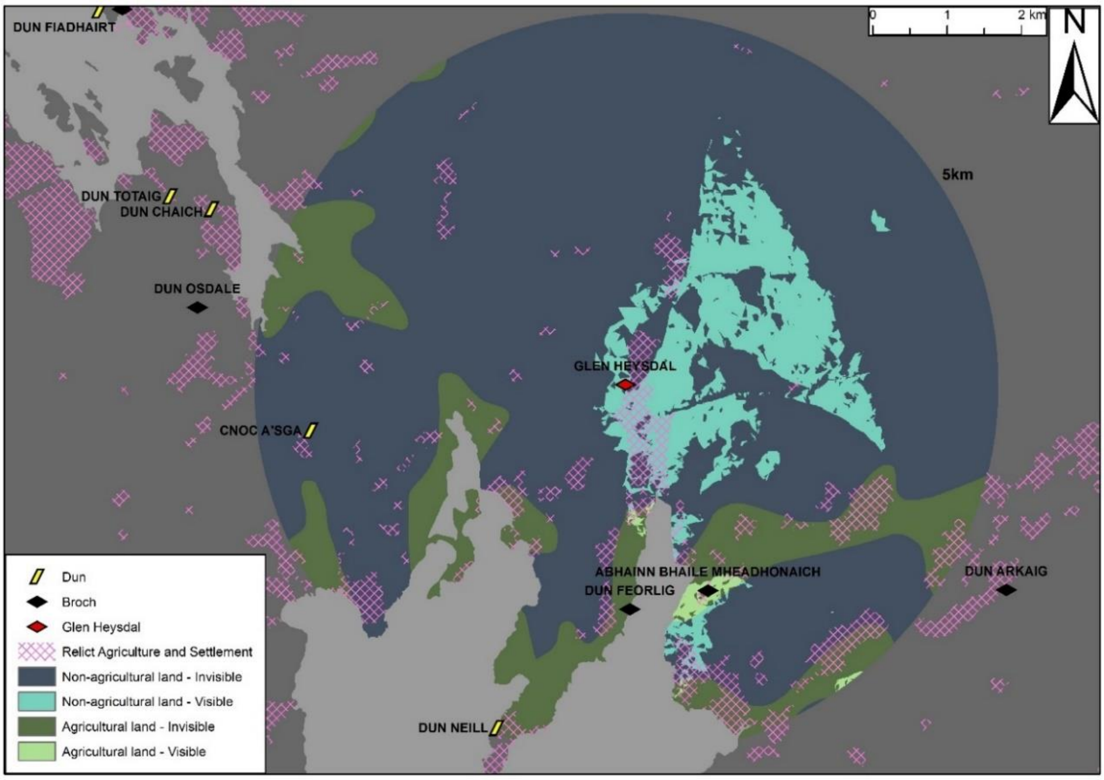

Figure 8.82: *5 km visibility of agricultural land from Glen Heysdal (size W broch). Includes evidence for relict settlement and agricultural land use.*

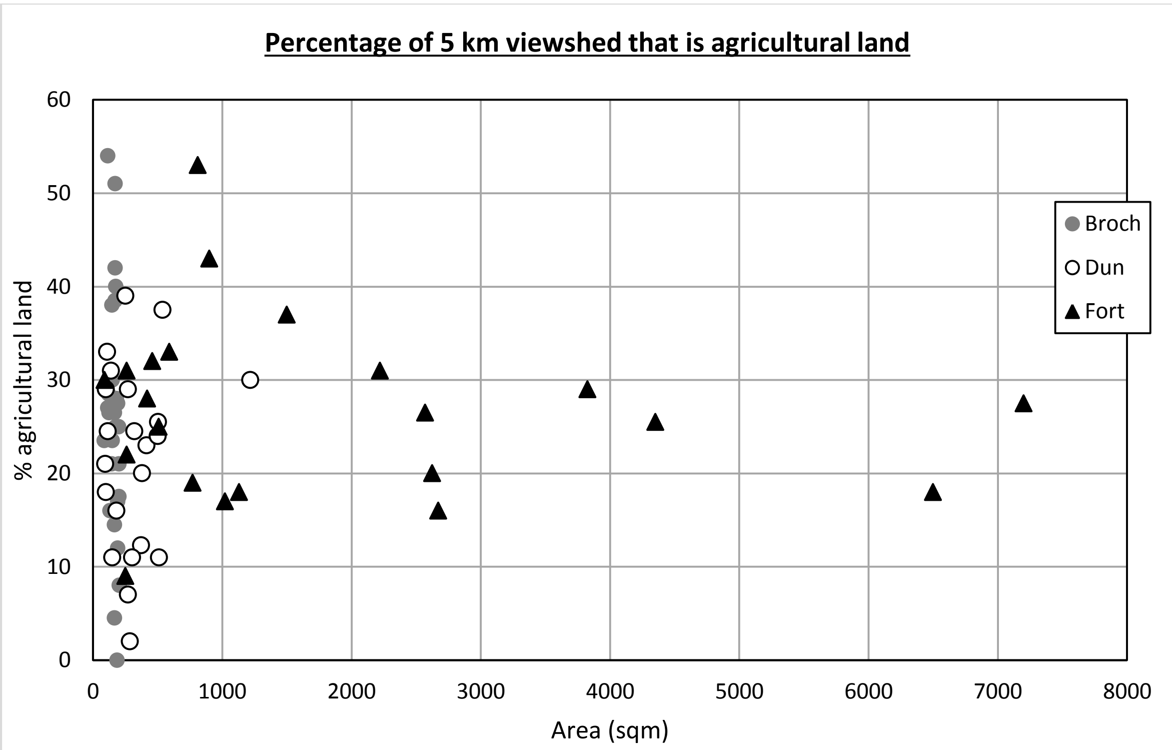

Figure 8.83: *The percentage of each site's 5 km land viewshed that is agricultural land. Sites of size X have comparatively low percentages.*

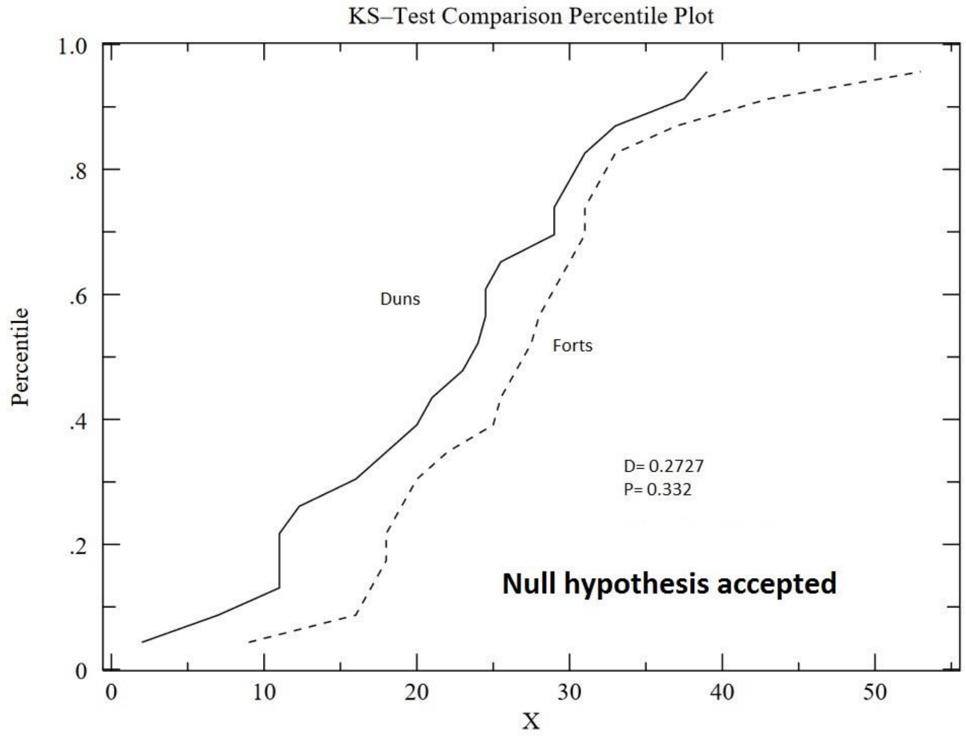

Figure 8.84: *K-S test comparing the percentage of agricultural land in the 5 km landward viewsheds of sites classed as duns and forts.*

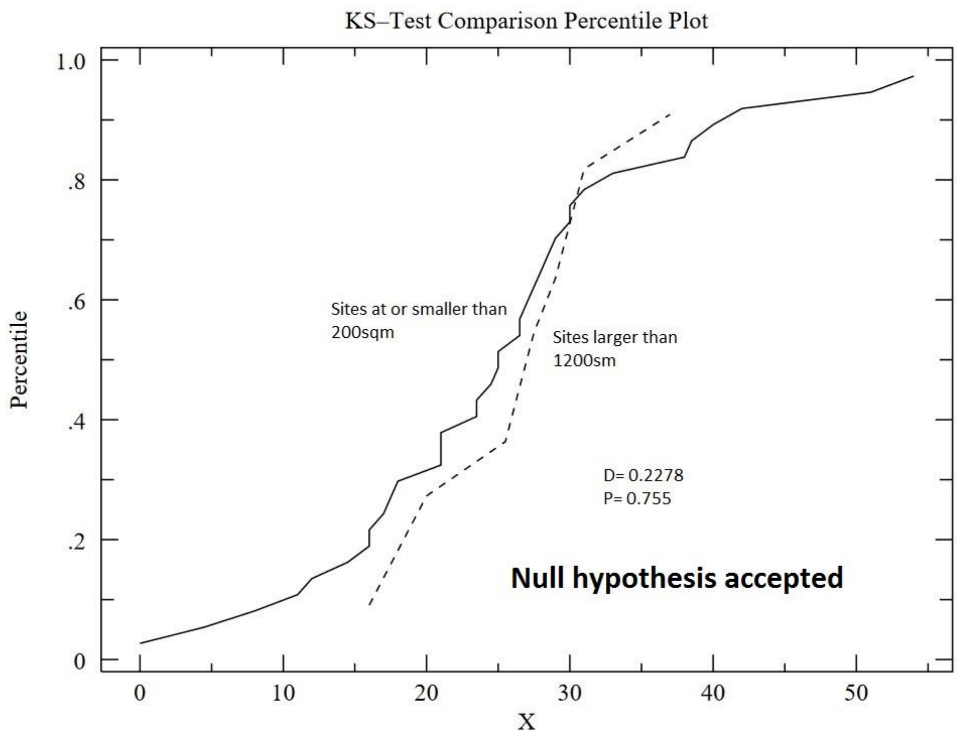

Figure 8.85: *K-S test comparing the percentage of agricultural land in the 5 km landward viewsheds of size W with size Z sites. There is no evidence for a significant difference between the groupings.*

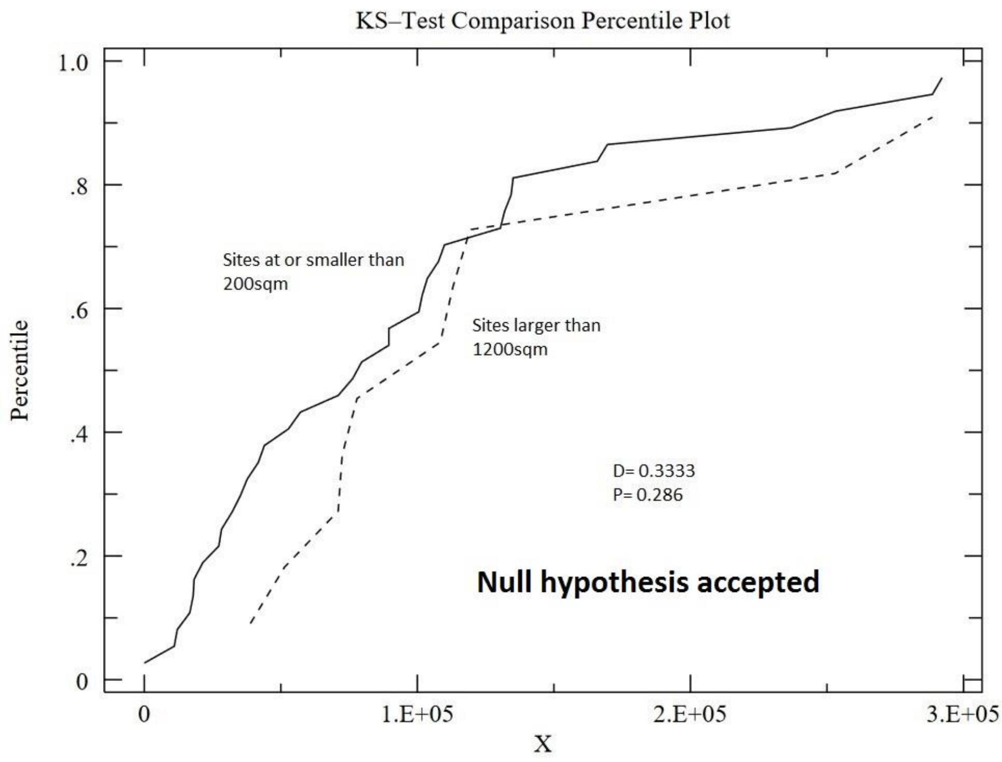

Figure 8.86: *K-S test comparing the area of agricultural land visible, over a 5 km distance, from size W sites with that of size Z sites.*

Over the 1 km radius the visual focus of sites in the case study is on agricultural land, that is if we are to assume a null hypothesis in the relationship between percentage of sites' viewsheds and the percentage of total land surrounding sites. The 1 km viewsheds of sites are comprised of a higher proportion of agricultural land (47.3%) than the 1 km surroundings of sites (41.5%) (Table 8.2 & 8.3).

Sites classed as forts have visibility that is least targeted towards agricultural land over the shorter distance, and, along with size X sites, oversee the smallest area of such land within 1 km, just under 39 hectares (Table 8.3). However size Z sites can see the greatest area of agricultural land at this distance of any site type, over 50 ha, if treated as a group. Brochs and size W sites have the highest percentage of agricultural land in their 1 km viewsheds, and a comparatively large area of visible agricultural land, in contrast to the 5 km distance (Table 8.3).

The greater percentage of farming land in the viewsheds of brochs and other roofable-sized sites (size W) at the 1 km distance relative to other site types suggests that these sites' vision is targeted on that land, compared to the 1 km landscape as a whole. This cannot be shown conclusively, however – when analysed using a K-S test, the viewsheds of size W sites were not significantly statistically more likely to contain a higher percentage of agricultural land than the percentage of that land that is present in their surrounding 1 km (Figure 8.87). A similar test performed on size Z sites strongly suggests that the visibility and proximity datasets for them are part of the same distribution (Figure 8.88), and that therefore the larger enclosures were not specifically positioned for best visibility of agricultural land over the 1 km radius.

In an attempt to determine whether certain site size S may have been deliberately or unusually sited to view better quality land, the percentage of nearby (1 km) agricultural land that is or is not visible from sites was analysed using a series of K-S tests. The results of these tests indicate that agricultural land is likely to be more visible than average from sites compared to the general 1 km landscape, if a null hypothesis is assumed in the relationship between percentage of agricultural land and total land visible (Figure 8.89). This is also true of size W sites (Figure 8.90), but is not at all apparent among the largest ten sites in northern Skye that have agricultural land within 1 km. These size Z enclosures actually have a greater visibility of 1 km land that is not agricultural, up to the 60^{th} percentile, while from the 60^{th} to the 100^{th} percentile the opposite is true, with the datasets not likely to differ statistically (Figure 8.91). These results indicate that the smallest sites in the case study area are almost universally sited with statistically unusually high visibility of agricultural land locally, while, contrastingly, six out of the ten largest enclosures appear to be uninterested in such land over the 1 km distance, with the remaining four large sites very strongly focused on their nearby farming land. This may point to variability in the function of the largest forts, with some more habitually involved in day-to-day farming activity than others. In contrast, sites of roofable size are intimately involved in that activity. Size X sites have a higher proportion of agricultural land in their viewsheds than their 1 km surroundings as a whole, but this is not statistically significant (Figure 8.92) – their vision is perhaps not as targeted on agricultural land, in preference to the general 1 km landscape, over a 1 km distance as it is for size W sites.

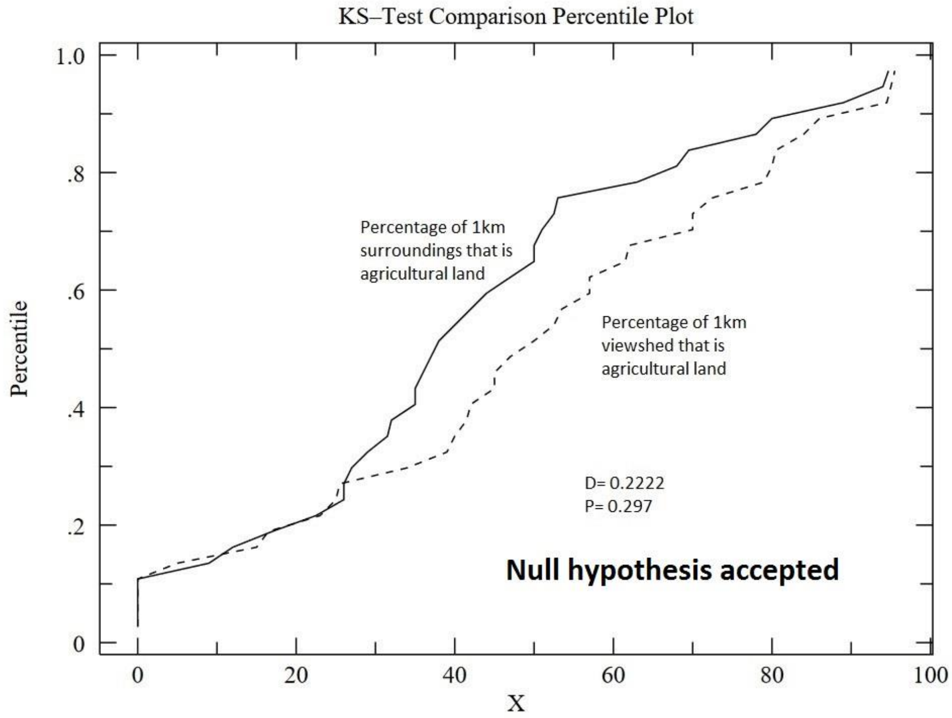

Figure 8.87: *K-S test comparing the percentage of agricultural land in the 1 km landward viewsheds of size W sites with the proportion of land within 1 km that is agricultural land.*

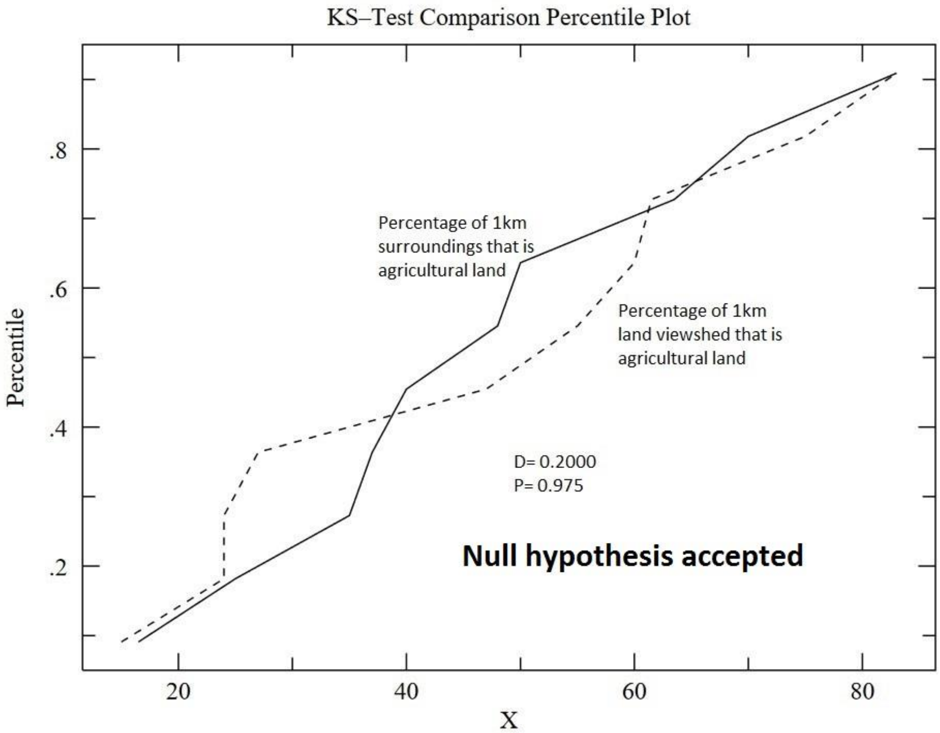

Figure 8.88: *K-S test comparing the percentage of agricultural land in the 1 km landward viewsheds of size Z sites with the proportion of land within 1 km that is agricultural land.*

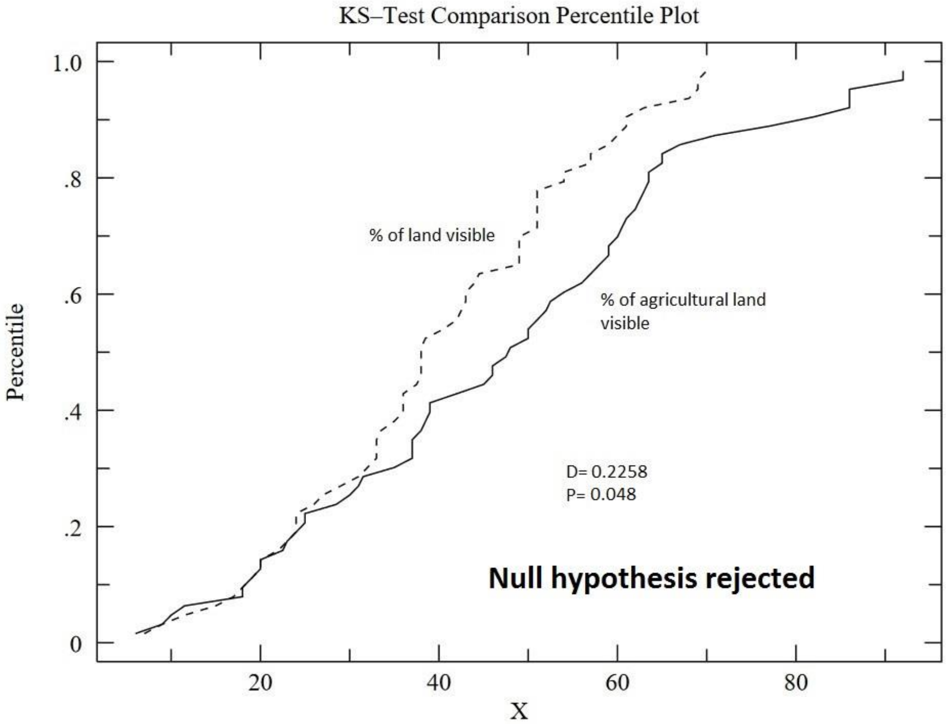

Figure 8.89: *K-S test comparing the percentage of 1 km land that is visible with the percentage of 1 km agricultural land that is visible from all sites in the case study. A statistically higher proportion of agricultural land is visible than total land.*

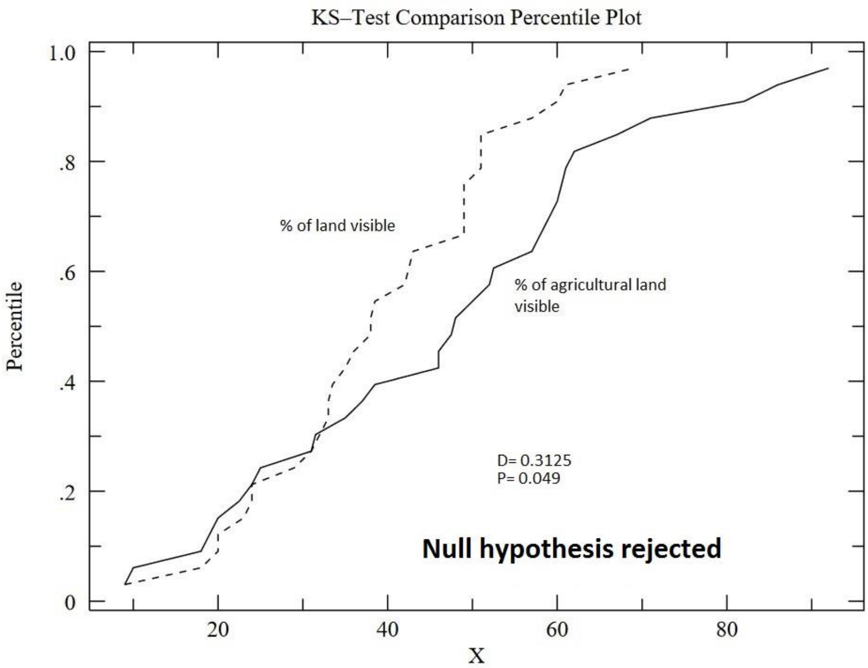

Figure 8.90: *K-S test comparing the percentage of 1 km land that is visible with the percentage of 1 km agricultural land that is visible from size W sites. A statistically higher proportion of agricultural land is visible than total land.*

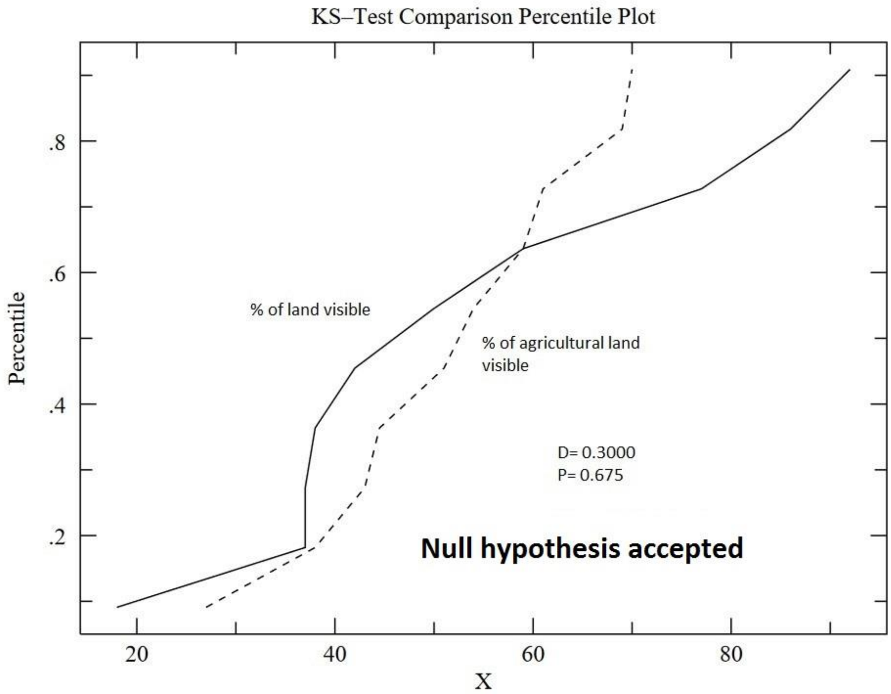

Figure 8.91: *K-S test comparing the percentage of 1 km land that is visible with the percentage of 1 km agricultural land that is visible from size Z sites. The datasets are unlikely to differ, suggesting that the vision of size Z sites is not targeted on agricultural land.*

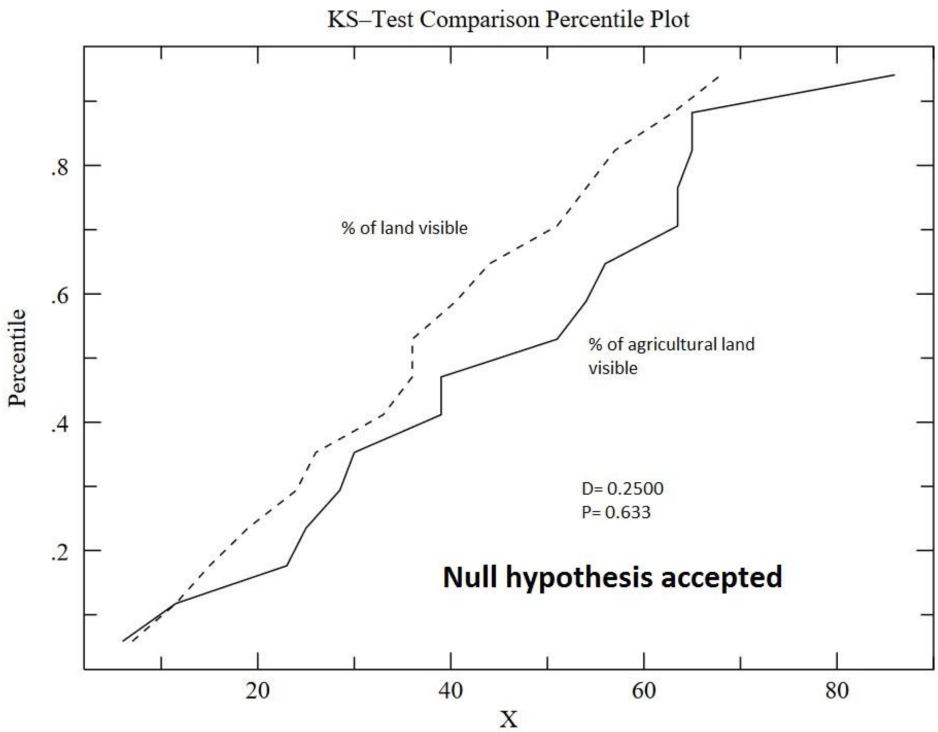

Figure 8.92: *K-S test comparing the percentage of 1 km land that is visible with the percentage of 1 km agricultural land that is visible from size X sites. The datasets are*

unlikely to differ, suggesting that the vision of size X sites is not targeted on agricultural land.

Of the largest sites in northern Skye, few are positioned to see more than 50 ha of agricultural land within a 1 km radius (Figure 8.95). However, more than 50% of Dun Santavaig, Ullinish (Figure 8.78), Dun Cruinn (Figure 8.77) and Dun Gerashader's (Figure 8.76) local land visibility is made up of agricultural land (Figure 8.94). These four sites all have a much higher percentage of agricultural land in their 1 km viewsheds relative to the 5 km distance, while this is not the case for the forts of Annait, Creag nam Mann or Dun Mor – the vision of these three sites is not targeted towards agricultural land in favour of the wider landscape. The reasoning behind Dun Cruinn's placement, discussed earlier (section 8.2.4) as not practically defensive in nature, may have been to overlook the agricultural land around Loch Snizort Beag (Figures 8.13, 8.77 & 8.93). The site with the greatest area of agricultural land visible locally is the tiny fort of Dun Beag (Figure 8.79), near Staffin on Trotternish, a site that also stands out for its topographic prominence. Among size W sites, Dun a'Chetechin (Figure 8.80), one of the most visible sites in the case study area (Figure 8.45), has a much higher percentage of agricultural land in its 1 km, than its 5 km, viewshed, with Kingsburgh displaying a similar pattern (Figures 8.96 & 8.97). While both sites have good visibility of agricultural land over 5 km their 1 km visibility is exceptional, and would suggest that these two sites are excellent examples of the general trend for sites of roofable size to be locally focused on such land.

Figure 8.93: *Dun Cruinn, taken from the south east, towards Loch Snizort Beag and farming land.*

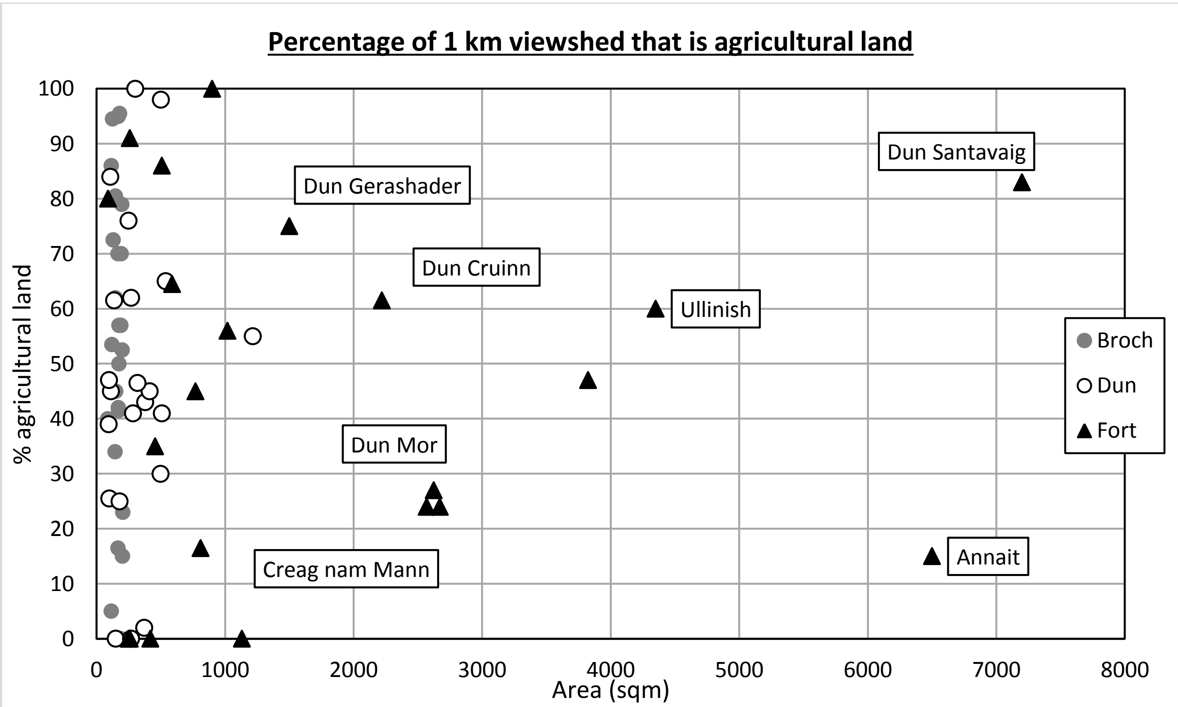

Figure 8.94: *The percentage of each site's 1 km land viewshed that is agricultural land. Indicating the varied nature of the 1 km viewsheds of size Z sites.*

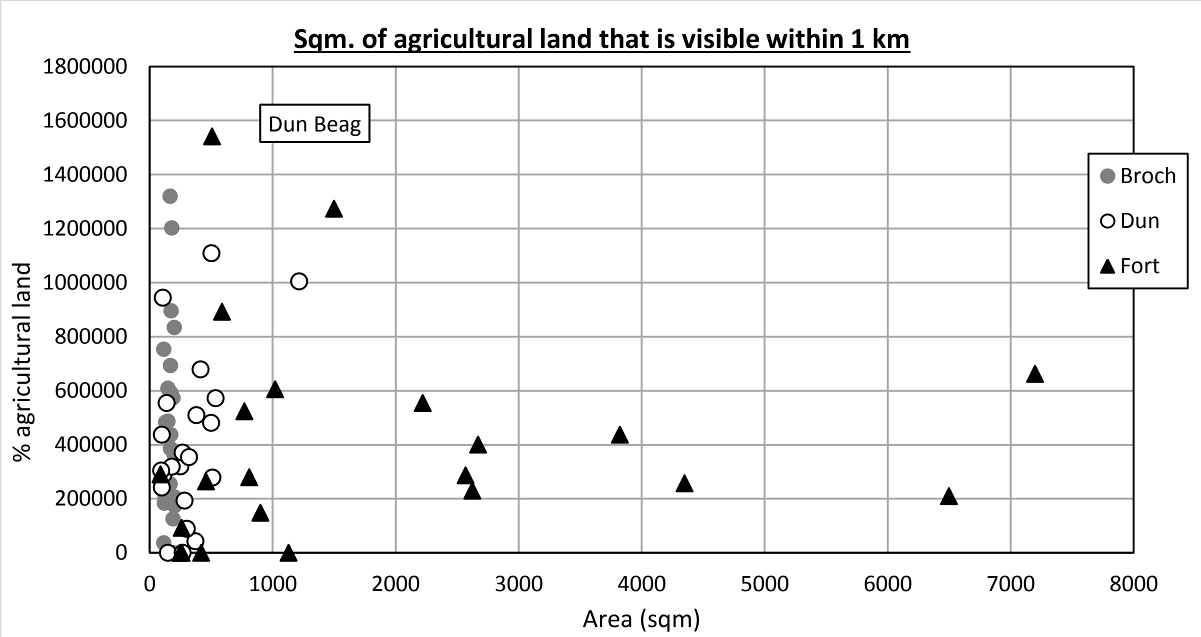

Figure 8.95: *The area of agricultural land visible within 1 km of sites. This shows that size Z sites have vision of a comparatively modest extent of that land over the 1 km distance.*

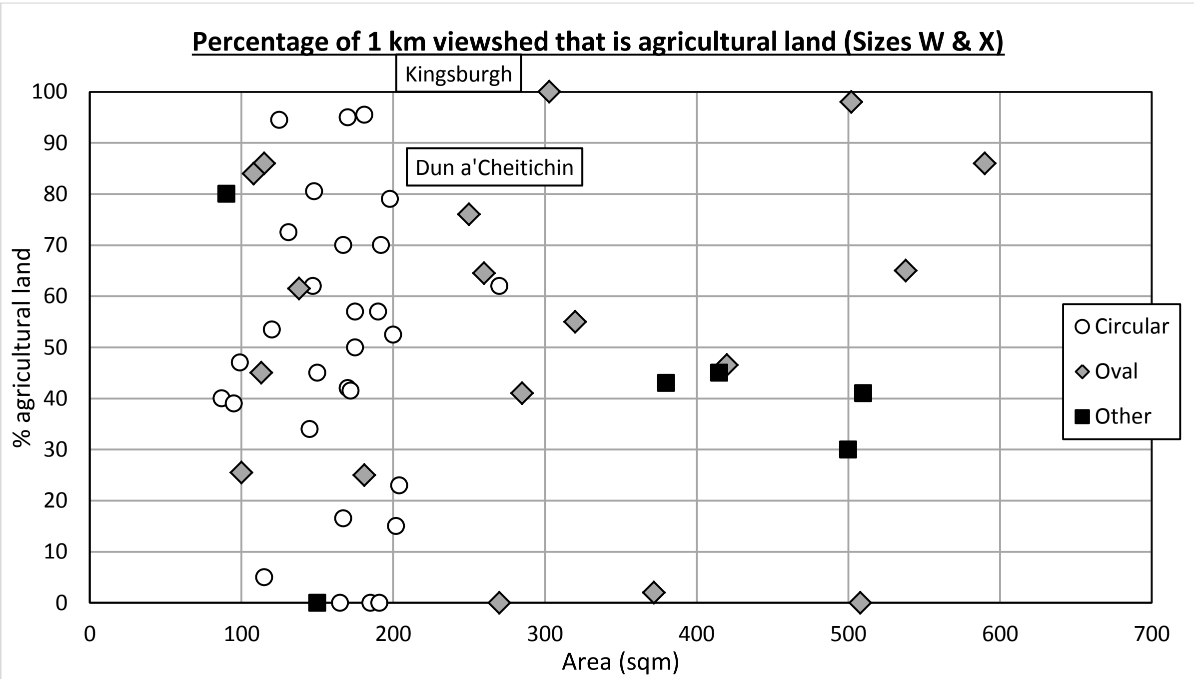

Figure 8.96: *The percentage of each site's 1 km land viewshed that is agricultural land. Most sites have a much higher percentage of agricultural land within their 1 km than their 5 km viewsheds (Figure 8.97).*

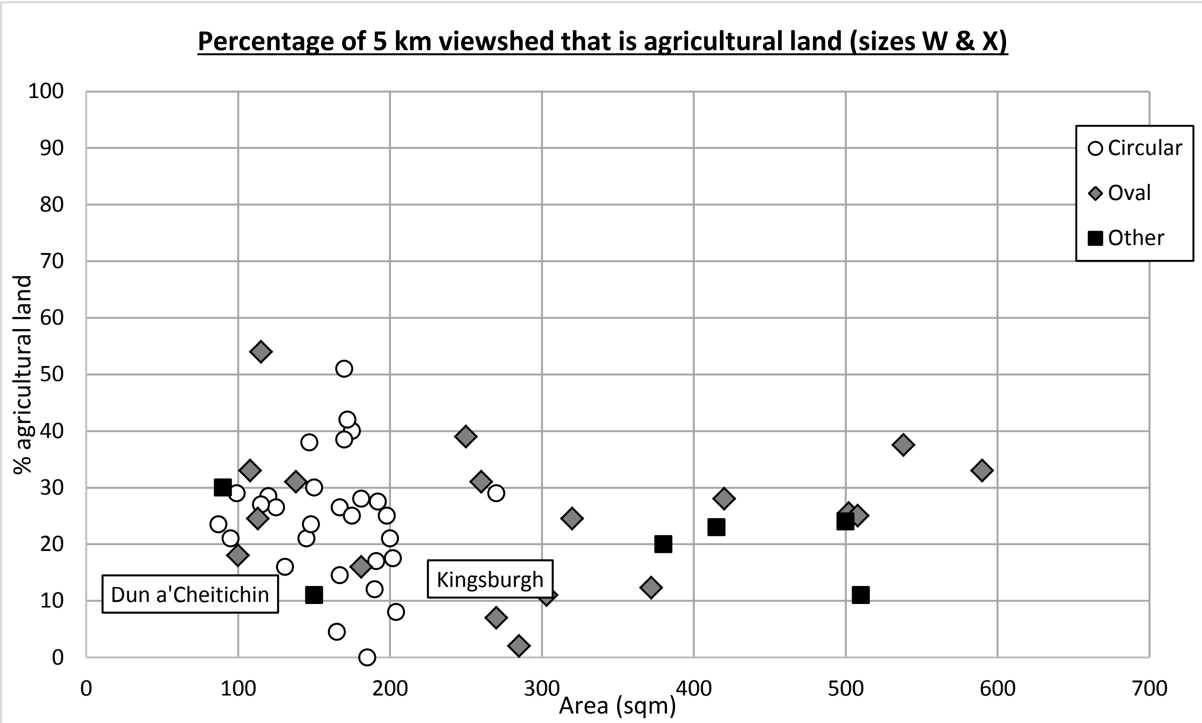

Figure 8.97: *The percentage of each site's 5 km land viewshed that is agricultural land. These are notably lower than Figure 8.96.*

8.2.7 Visibility from the sea

The visibility of northern Skye from the sea was measured using a cumulative viewshed from 2000 random points in the sea within 15 km of land in the case study, and the results of this analysis are summarised in Table 8.4 and Figure 8.98. Few statistical differences were noted with respect to the distance of various RCAHMS site categories from the coast, and sites classed as brochs and duns are almost identical in terms of their sea visibility, with the datasets representing mean visibility of the area enclosed by both categories not likely to differ (Figure 8.101). Forts are likely to be more visible than brochs from sea, whether the most visible pixel or the mean visibility of the interior and defences is used, but not to a statistically significant degree (Figures 8.102 & 8.103). This broadly fits with the land visibility of the various site categories (Table 8.1; Figures 8.45 & 8.46) and suggests that forts are positioned in more visible places in the landscape regardless of whether that visibility is land-based or sea-based. Size Y sites may appear to be unusually visible from sea (Table 8.4), but there are only 4 examples and two of them, Dun Liath and Dun Vallerain, are among the most visible in the case study area (Figure 8.99). Sites classed as forts comprise 5 out of the top 6 most visible sites from sea if the most visible pixel is used

(Figure 8.99), which is not the case in the cumulative viewshed from land (Figure 8.46). The polarisation of forts in Figure 8.99 reflects a similar pattern in the distance of sites from the sea (Figure 8.17 & 8.18) – they are either close to the coast with exceptional sea visibility or over 1 km from it with very poor sea visibility. Size W sites with complex architecture and outworks are not especially visible from sea, although only three examples are visible from fewer than 5 random sea points (Figure 8.100). Most sites with complex architecture can at very least be seen from the sea, while size W sites with no complex architecture seem to be relatively less visible.

	Mean visibility	**Most visible point (average)**
Total case study area	24.5	
All sites	46.9	66.8
Brochs	39.2	48.9
Duns	43	55.7
Forts	61.6	103.2
Size W	45.6	56.1
Size X	36.3	63.4
Size Y	108.8	149.5
Size Z	46.9	78.7

Table 8.4: *Average number of random sea points that can see sites in the case study area.*

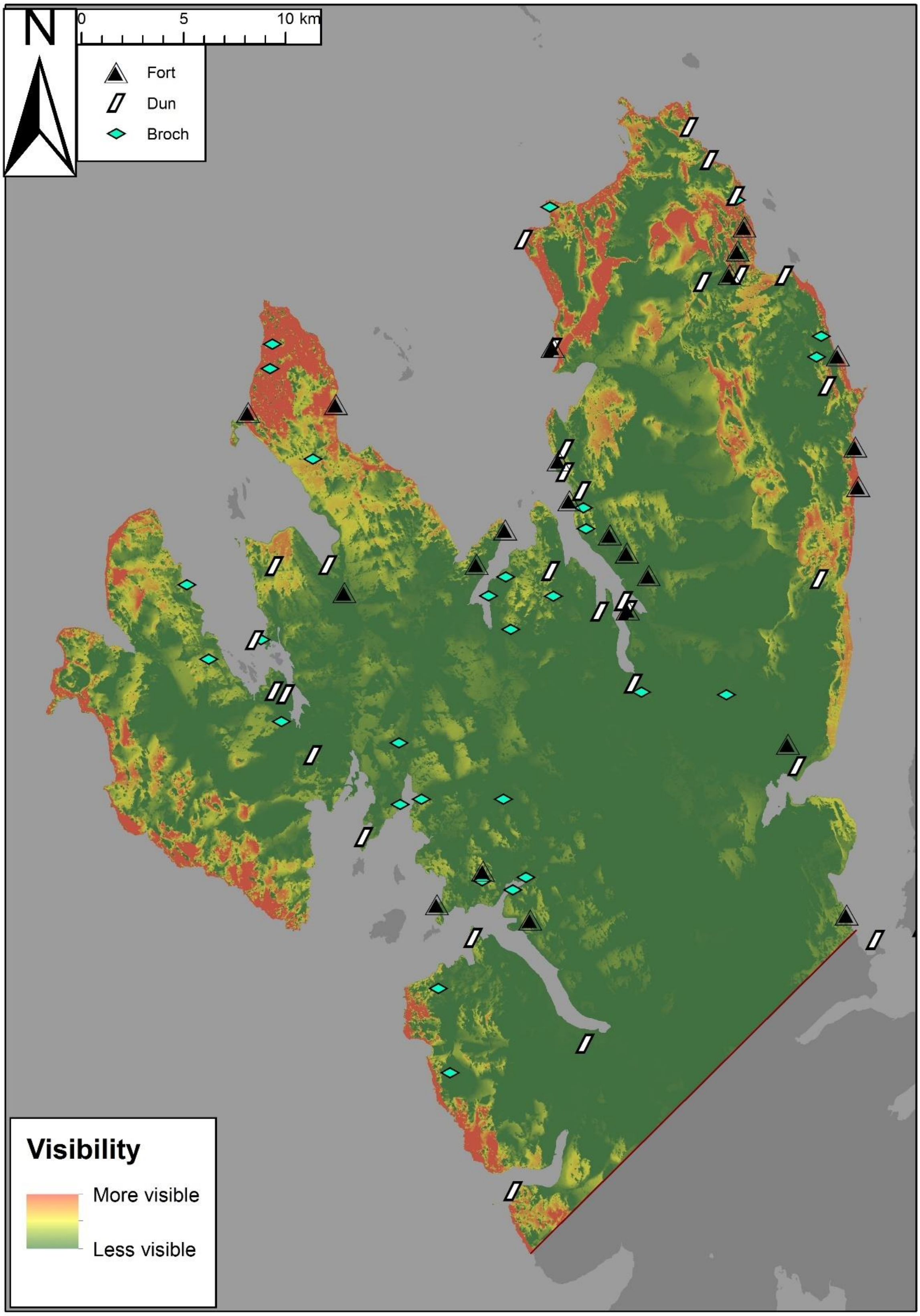

Figure 8.98: *Results of cumulative viewshed representing visibility from sea of case study area.*

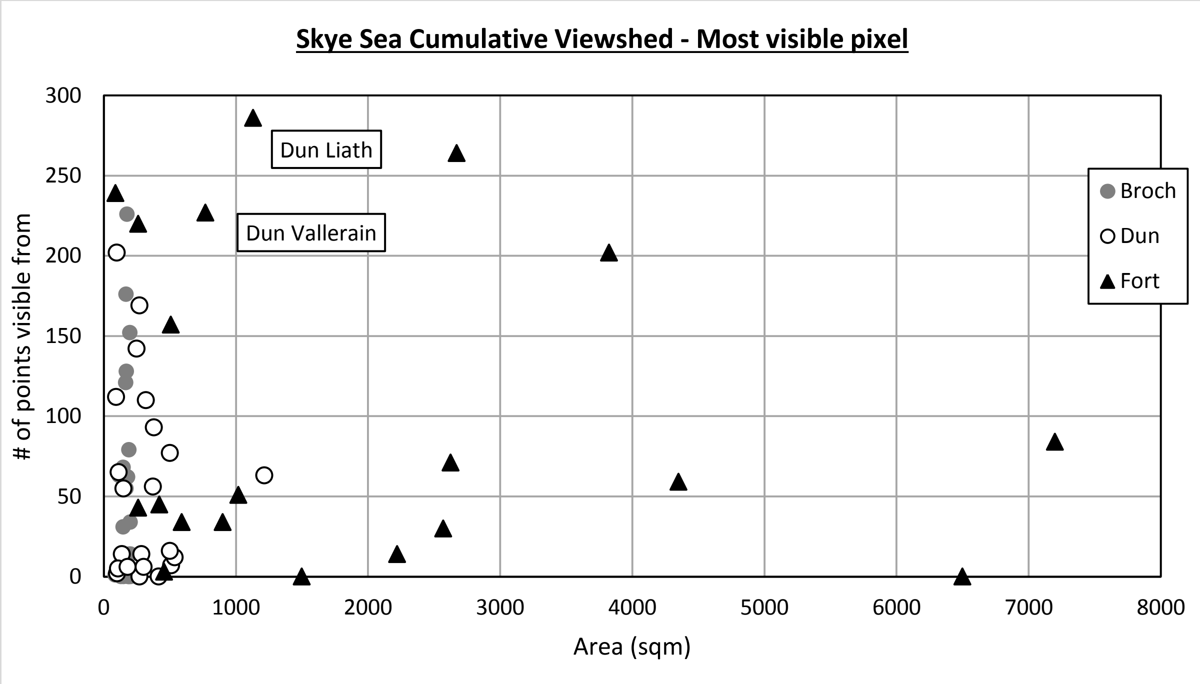

Figure 8.99: *Visibility of all sites from the sea using the most visible pixel on or inside the defences. Sites classed as forts are among the most visible examples.*

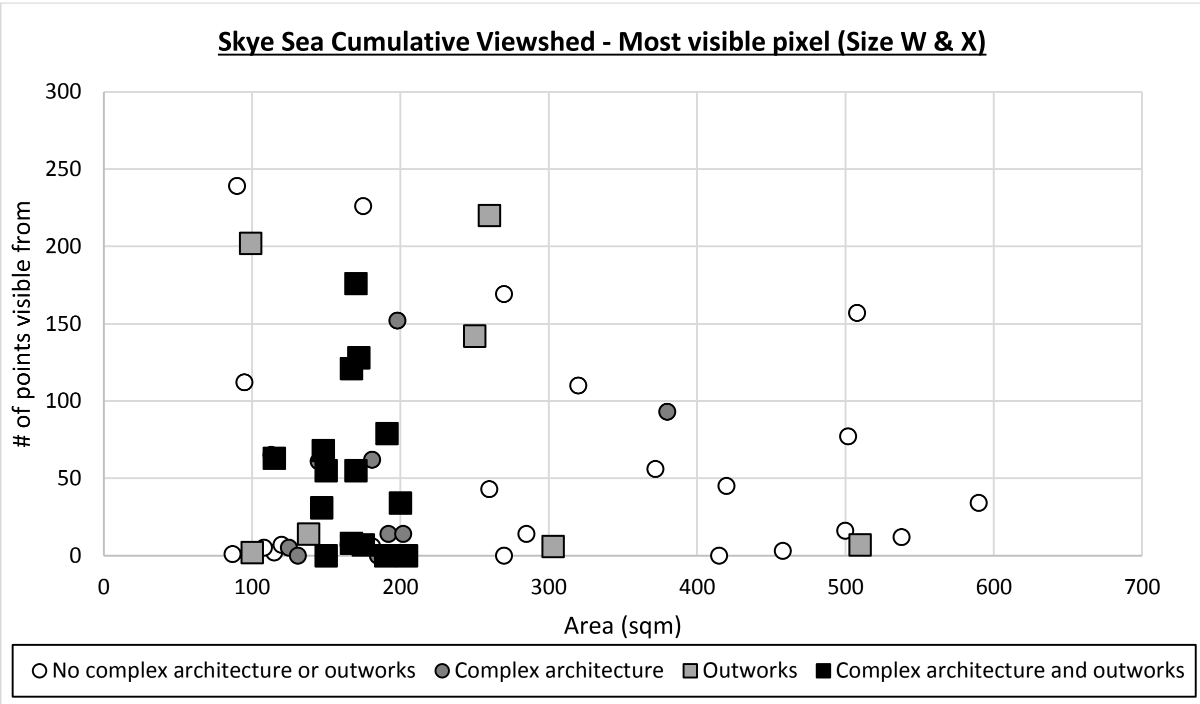

Figure 8.100: *Visibility of sites from the sea using the most visible pixel on or inside the defences, categorised by presence of architectural features. Few patterns are apparent.*

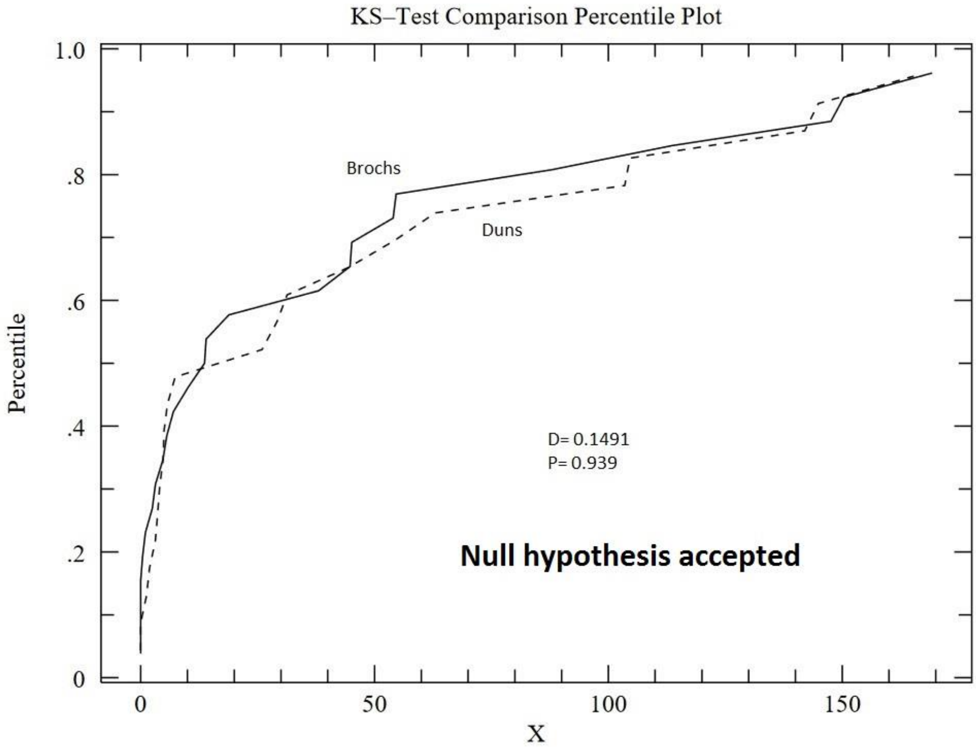

Figure 8.101: *K-S test comparing the visibility from sea of all sites classed as brochs with duns (mean visibility). The two site classes do not differ significantly.*

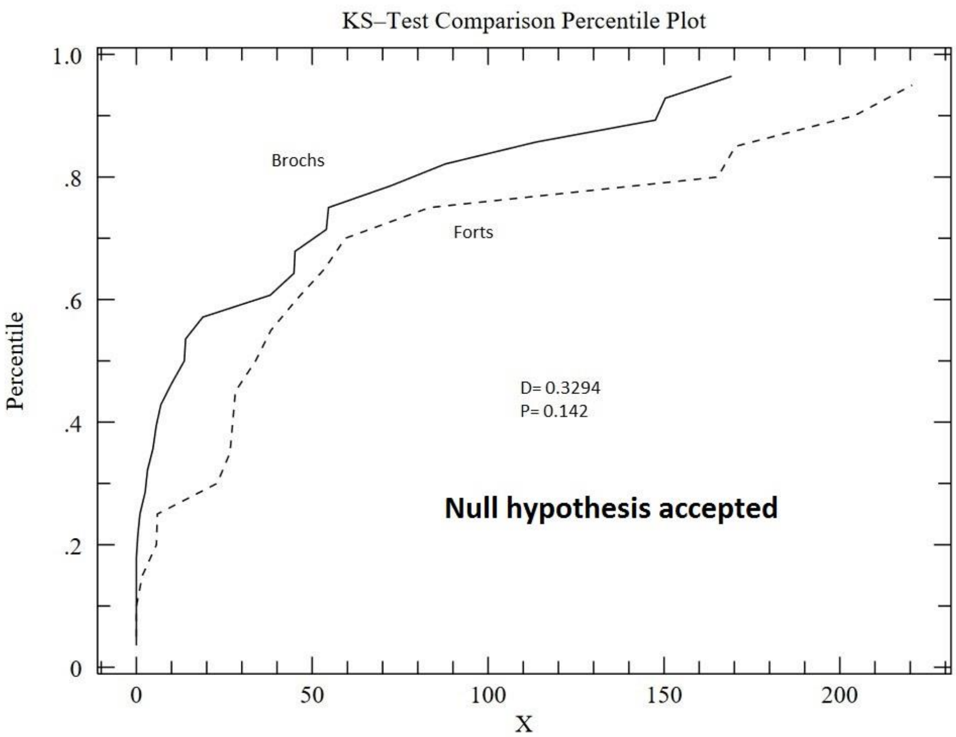

Figure 8.102: *K-S test comparing the visibility from sea of all sites classed as forts and brochs (mean visibility).*

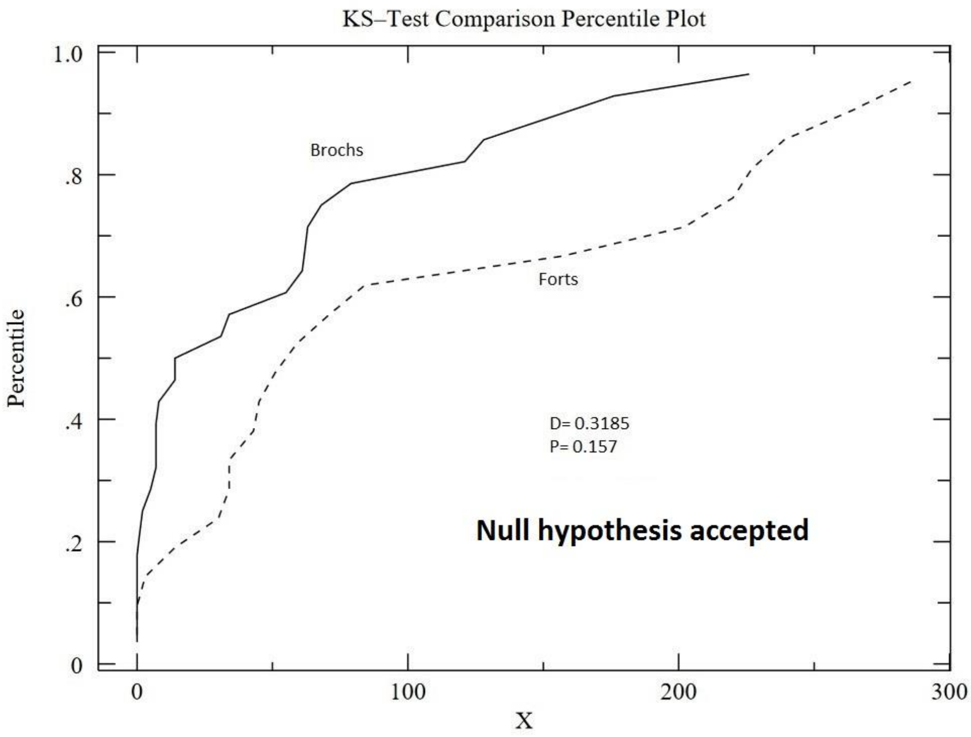

Figure 8.103: *K-S test comparing the visibility from sea of all sites classed as forts and brochs (most visible point).*

The visibility of all sites within 600 m of the coast was compared with that of 100 random points within that distance of the sea. This distance was chosen to correspond with that used in the Kintyre case study (Chapter 7.2.7) although that distance does not appear to be especially significant for Skye (Figure 8.17) in terms of site distribution compared to Kintyre. The mean visibility of land occupied by sites within 600 m of the coast was 58.3, compared to an average of 49.9 for a pixel in the landscape within that distance of the sea, suggesting that sites are moderately more visible than expected given a null hypothesis (Table 8.5). For sites classed as brochs and duns this is not the case, with a pixel on ground occupied by brochs actually on average less visible from sea than a random pixel in the landscape. When compared statistically it is apparent that, while coastal sites are mainly more visible, with respect to the mean visibility of their footprints, than 100 random coastal points, this is not to a statistically significant degree (Figure 8.104). Brochs are indistinguishable from the random points in the landscape in this respect (Figure 8.105), while coastal forts may be more visible, but again not to the degree that one can say that they comprise a definitively distinct dataset (Figure 8.106). Neither size W sites nor size X sites are statistically likely to be more visible than the 100 random points, although the former were much closer to rejection of the null hypothesis in their K-S test (Figure 8.107 &

Figure 8.108). Coastal sites, particularly those of roofable size, would then appear not to be necessarily positioned with visibility from sea in mind. Coastal size X sites are not more visible from sea than an average pixel in the landscape - a contrast to the land visibility of all sites of this size, which is quite high. This would suggest that those sites of this size that are close to the sea do not have particularly good visibility to or from it.

	Mean visibility of site footprint	**Most visible point (average)**
Land within 600 m of coast	49.9	
All sites within 600 m of coast	58.3	80.8
Brochs	48.6	59.1
Duns	53.6	66.3
Forts	78.6	131.6
Size W	57	68.9
Size X	47.4	73.2
Size Y	113.3	160
Size Z	65.5	65.5

Table 8.5: *Average number of random sea points that can see sites and land within 600 m of the coast in the case study area.*

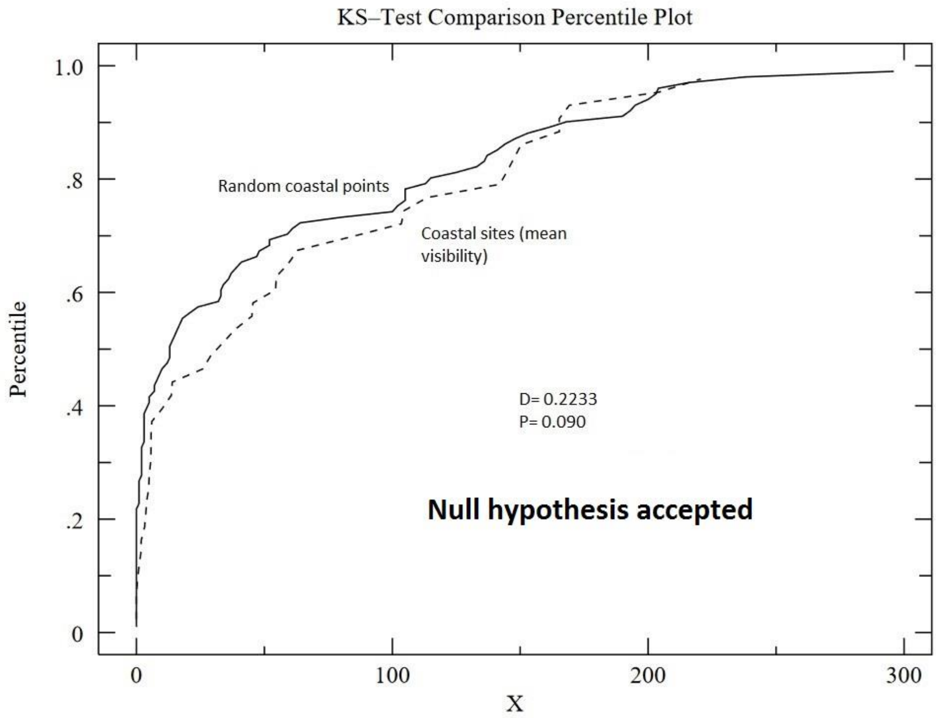

Figure 8.104: *K-S test comparing the mean visibility from sea of the interiors and defences of sites within 600 m of the coast, with 100 randomly generated coastal points.*

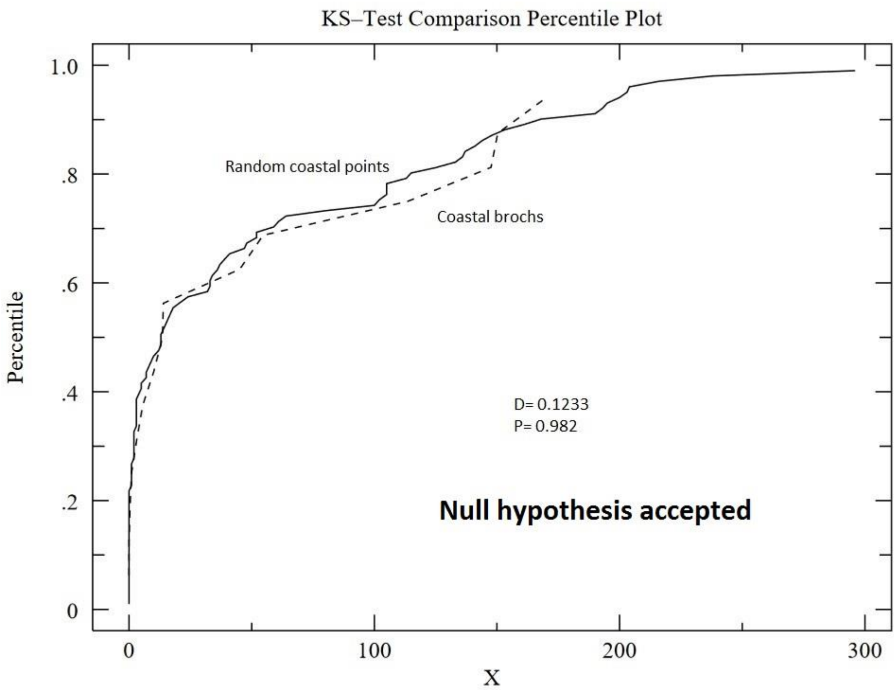

Figure 8.105: *K-S test comparing the mean visibility from sea of land enclosed by brochs within 600 m of the coast, with 100 randomly generated coastal points. The land on which brochs are placed is no more or less visible than a random point in the coastal landscape.*

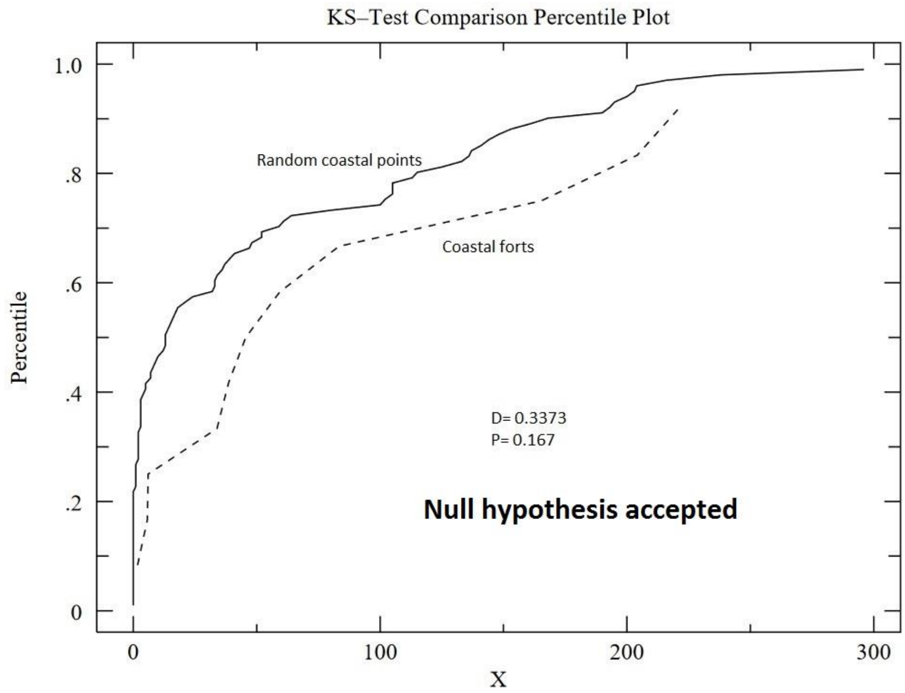

Figure 8.106: *K-S test comparing the mean visibility from sea of land enclosed by forts within 600 m of the coast, with 100 randomly generated coastal points.*

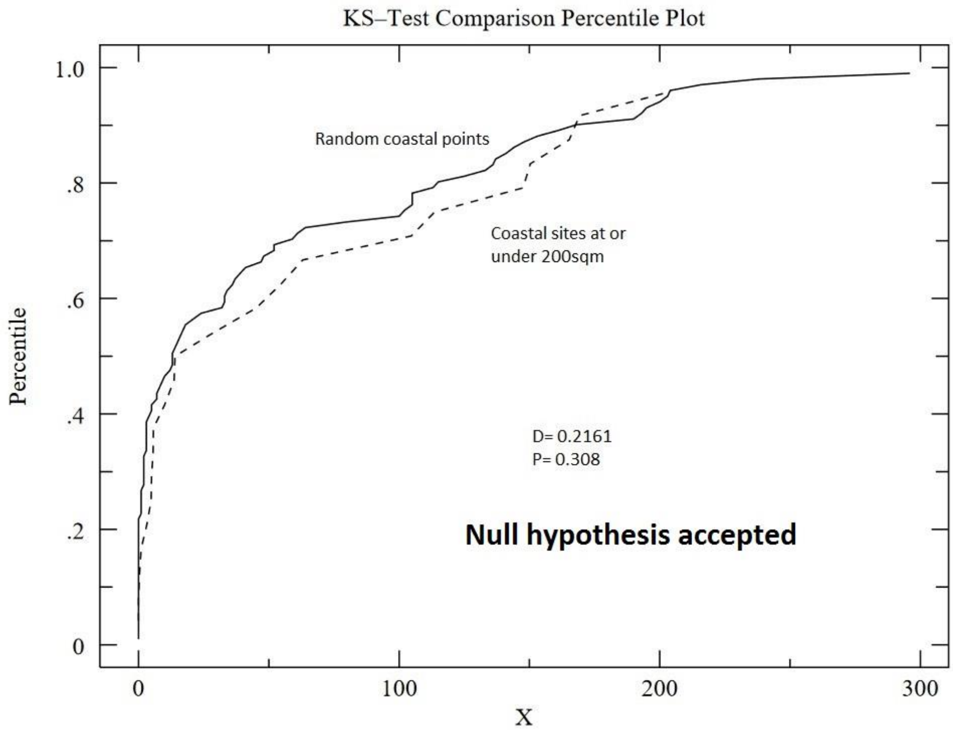

Figure 8.107: *K-S test comparing the mean visibility from sea of land enclosed by size W sites within 600 m of the coast, with 100 randomly generated coastal points.*

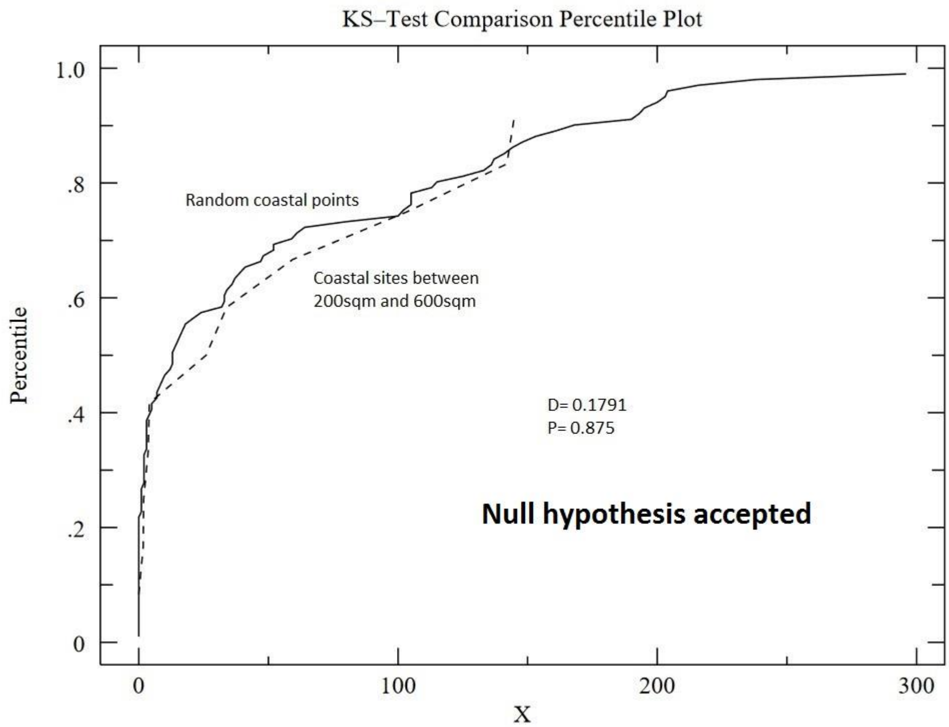

Figure 8.108: *K-S test comparing the mean visibility from sea of land enclosed by size X sites within 600 m of the coast, with 100 randomly generated coastal points. The land on which size Y sites are placed is not statistically more or less visible than the random coastal points.*

8.2.8 Site interrelationships

Very little is known about the relative dating of enclosed sites in Skye, even in comparison to that of southern Kintyre or Kirkcudbrightshire. Sites classed as brochs are the most well understood in terms of their chronology, and it seems likely that many of them were occupied for periods of the later 1st millennium BC and the start of the first millennium AD. There is little chronological information available for the mass of other enclosed sites, however, or any conception of whether they were contemporaneous with the brochs. Any GIS-based analysis of site interrelationships, particularly site intervisibility, in Skye is best approached as a way of generating a layer of potentially useful information about a set of sites that have no known chronological relationship with each other. Equally, it is important to be conservative in the conclusions and interpretations drawn from that analysis.

	10 km	5 km	1 km
All sites	3.8	2.2	0.31
Brochs	2.9	1.8	0.22
Duns	4.2	2.6	0.41
Forts	4.4	2.3	0.32
Size W	3.3	2.1	0.28
Size X	4.2	2.4	0.25
Size Y	4.0	2.4	0.20
Size Z	4.4	2.3	0.44

Table 8.6: *Average number of enclosed sites visible from various categories of site over 10 km, 5 km and 1 km radii.*

Percentage	10 km	5 km
All sites	23.6	34.9
Brochs	19.4	28.0
Duns	26.1	37.2
Forts	26.3	41.1
Size W	20.9	30.2
Size X	27.0	44.0
Size Y	24.7	28.7
Size Z	26.1	37.0

Table 8.7: *Percentage of enclosed sites visible from various categories of site over 10 km and 5 km radii.*

Percentage 10 km	Brochs	Duns	Forts
All sites	19.9	20.8	27.3
Brochs	19.4	18.6	17.5
Duns	25.9	16.1	31.8
Forts	14.5	28.3	34.8

Table 8.8: *Percentage of brochs, duns and forts visible from various categories of site over 10 km radius.*

Sites classed as duns and forts can see more enclosed sites over the 10 km distance than can brochs (Table 8.6). Perhaps a more useful statistic to use in determining whether sites are positioned to see others, however, is the percentage of sites visible. Dun and forts are again almost indistinguishable in this respect, with 26.1% and 26.3% of other enclosed sites visible within 10 km, while brochs lag with 19.4% (Table 8.7). Duns and forts being so close together in this respect may be of interest, because forts are positioned in significantly more visible places in the landscape than both duns and brochs (Figure 8.48 & 8.49) and it would make sense if they could see a similarly higher percentage of enclosed sites. This, however, is not the case.

It would seem, therefore, that the architecturally and morphologically miscellaneous group of duns may, as a category, be unusually sited to view other sites, at least compared to brochs and forts. Alternatively, brochs and forts may be positioned specifically so as not to be able to see other sites. The results of a Kolmogolov-Smirnov test make the latter unlikely – if the percentage of the 10 km landscape visible from brochs and the percentage of sites visible over than distance are compared statistically, a higher proportion of sites than landscape is visible from brochs (Figure 8.111). This does not completely remove the possibility that brochs are positioned specifically not to see other sites, however, as all sites, when considered as a group, are much more inherently visible than an average location in the landscape. Indeed, the relationship between proportion of visible sites and proportion of visible land is even more extreme for forts, with a p value of 0.000 signifying that the datasets are definitively different (Figure 8.112). To summarise, brochs and forts can both see a higher proportion of other sites than the visible proportion of the general landscape within 10 km, but duns can see a relatively higher percentage of sites compared to the other two site categories. It is therefore possible that many of the structures within the dun group were positioned in order to be intervisible with other enclosed sites. This does not necessarily imply that the intervisible sites were occupied contemporaneously, however.

What kinds of site are intervisible with these duns? Forts are more likely than brochs to be able to see sites classed as duns, but not to a statistically significant degree (Figure 8.113), however they do differ to a statistically significant degree from sites in the dun category itself when it comes to proportion of duns visible within a 10 km radius (Figure 8.114). The most interesting pattern, however, may be in the relationship between forts and brochs. Brochs can see 19.4% and duns can see 25.9% of other brochs within 10 km, but forts can only see 14.5% of brochs within their 10 km radii, in comparison with 10.25% of the total landscape (Table 8.8). When statistically compared, forts can see a slightly lower percentage of brochs, when compared to visibility of brochs from other brochs and duns, with the datasets not differing significantly (Figure 8.115, also Figure 8.109). Given the much higher general landscape visibility of forts, this is particularly striking. To summarise:

- Forts can see duns very well, brochs very poorly, and other forts moderately well, given their overall land visibility.
- Duns can see other duns very poorly, and brochs and forts very well.
- Brochs can see duns and other brochs moderately well, and forts very poorly, compared to their overall land visibility.

Of course, this is predicated on the assumption that these site categories are satisfactory as classificatory systems, a question that has been addressed in Chapter 3.4. Looking at these relationships in more detail, it appears to be the among smaller sites classed as forts that the difference in visibility of brochs and duns is most apparent (Figures 8.109 & 8.110), although a similar pattern is certainly present among the largest enclosures as well, with Dun Skudiburgh and Dun Dearg the only two size Z sites with a higher percentage of brochs visible than duns.

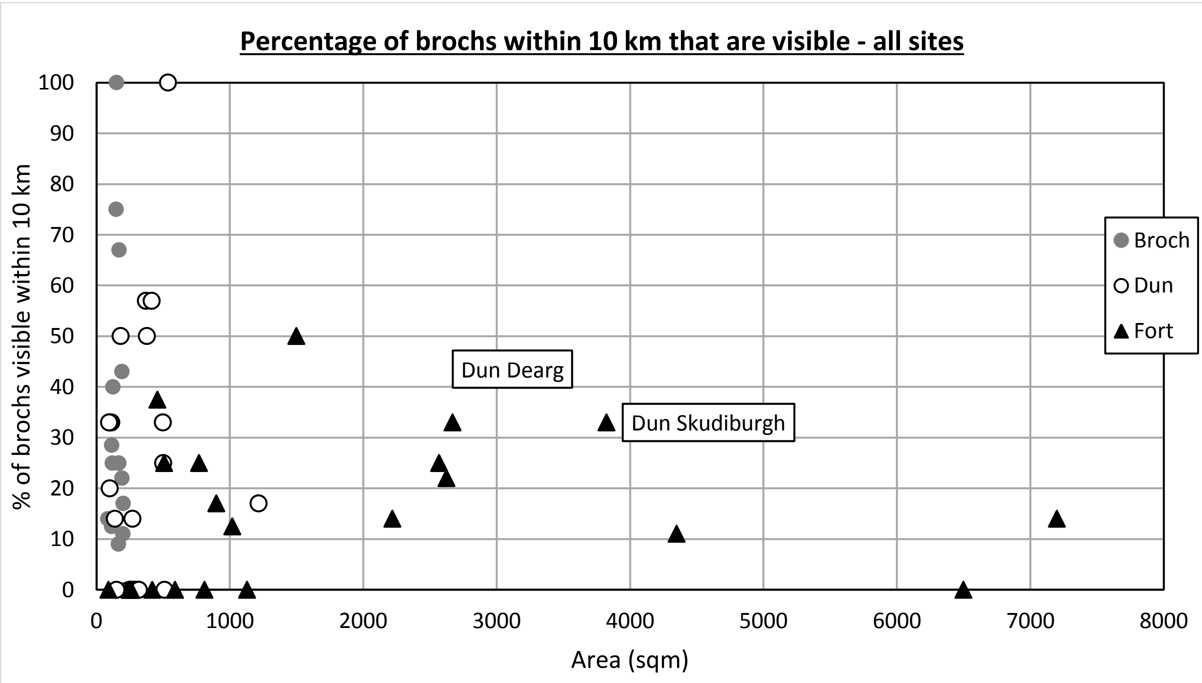

Figure 8.109: *The percentages of brochs within 10 km of enclosed sites that are visible. Forts can see brochs comparatively poorly.*

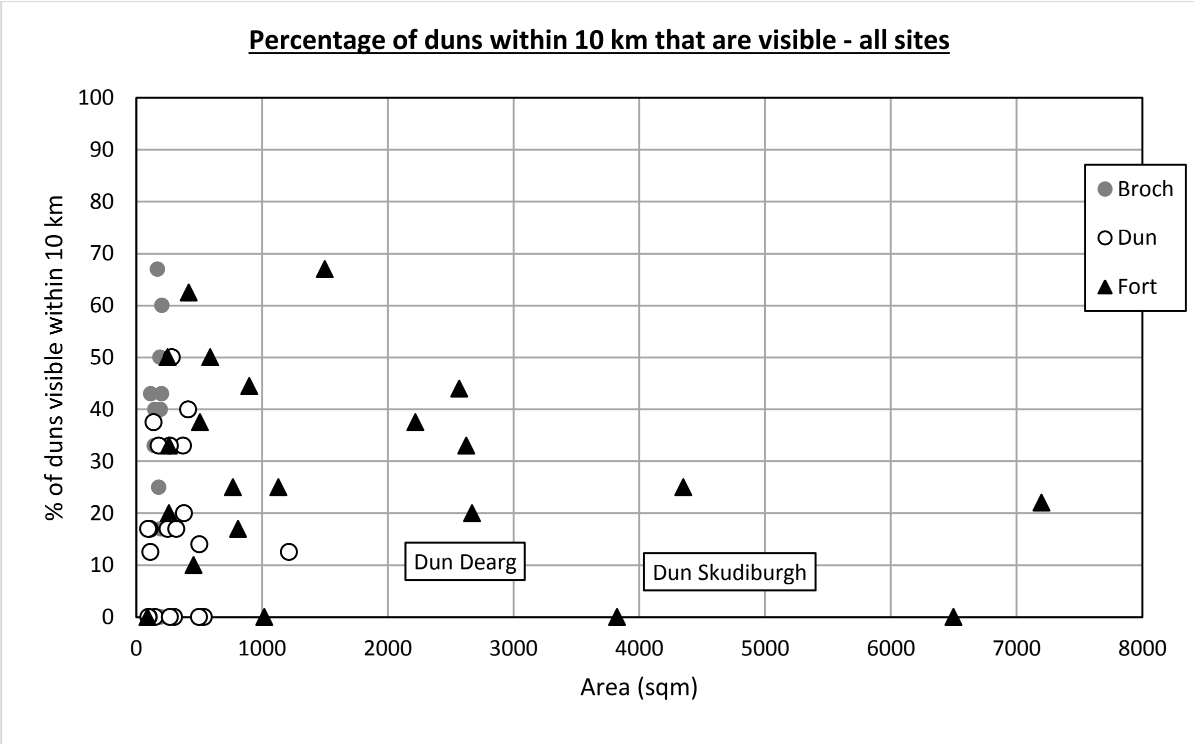

Figure 8.110: *The percentages of duns within 10 km of enclosed sites that are visible. Forts, especially smaller forts, can see duns very well.*

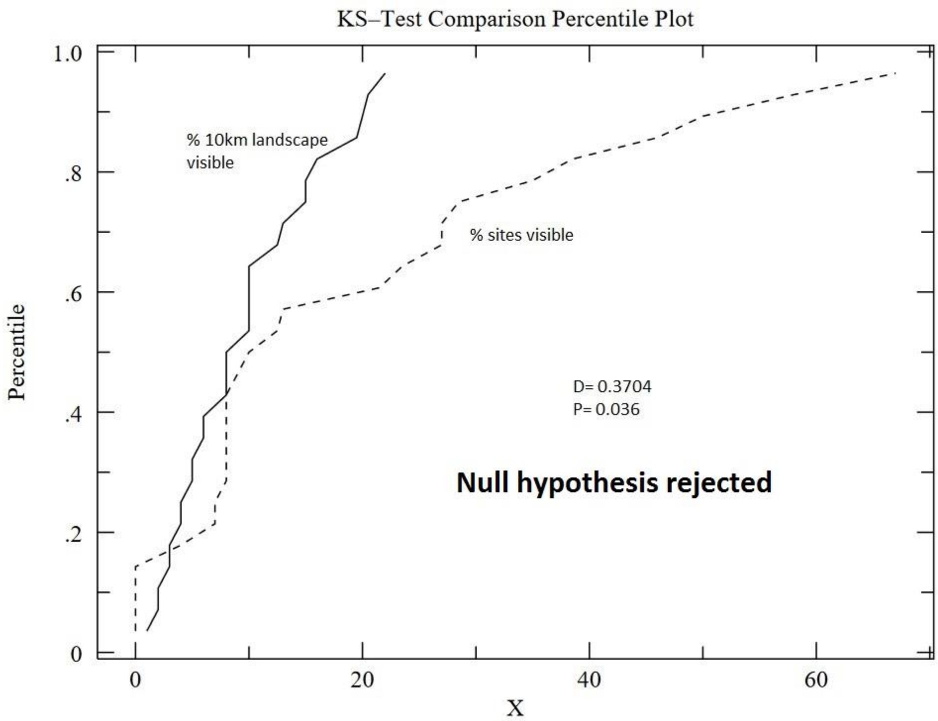

Figure 8.111: *K-S test comparing the percentage of the landscape and the percentage of other sites visible from brochs over a 10 km radius. Brochs can see a statistically higher proportion of other sites over that distance than the proportion of the landscape itself.*

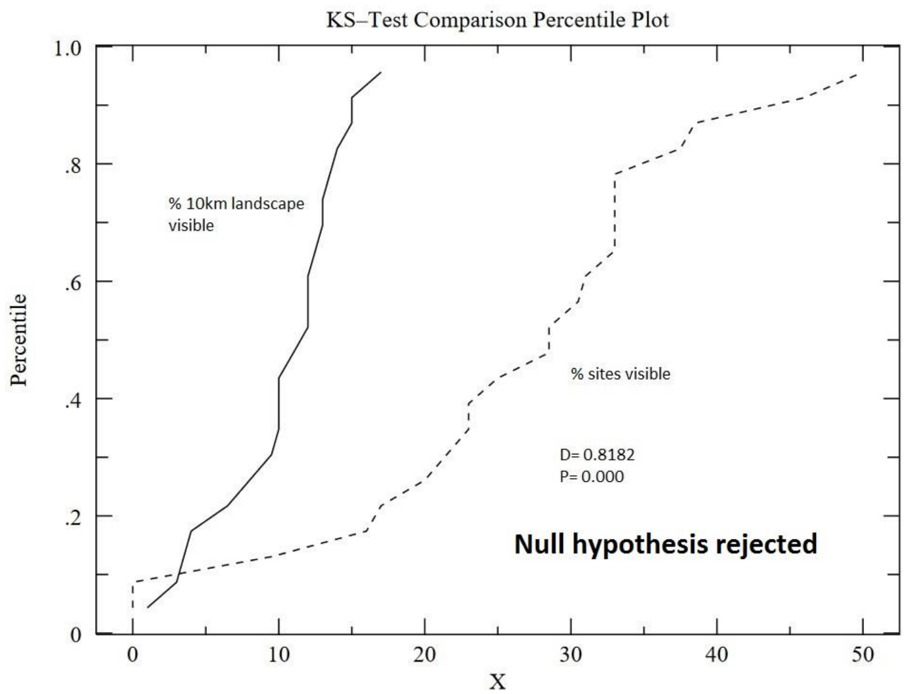

Figure 8.112: *K-S test comparing the percentage of the landscape and the percentage of other sites visible from forts over a 10 km radius. Forts can see a much higher proportion of other sites over that distance than the proportion of the landscape itself.*

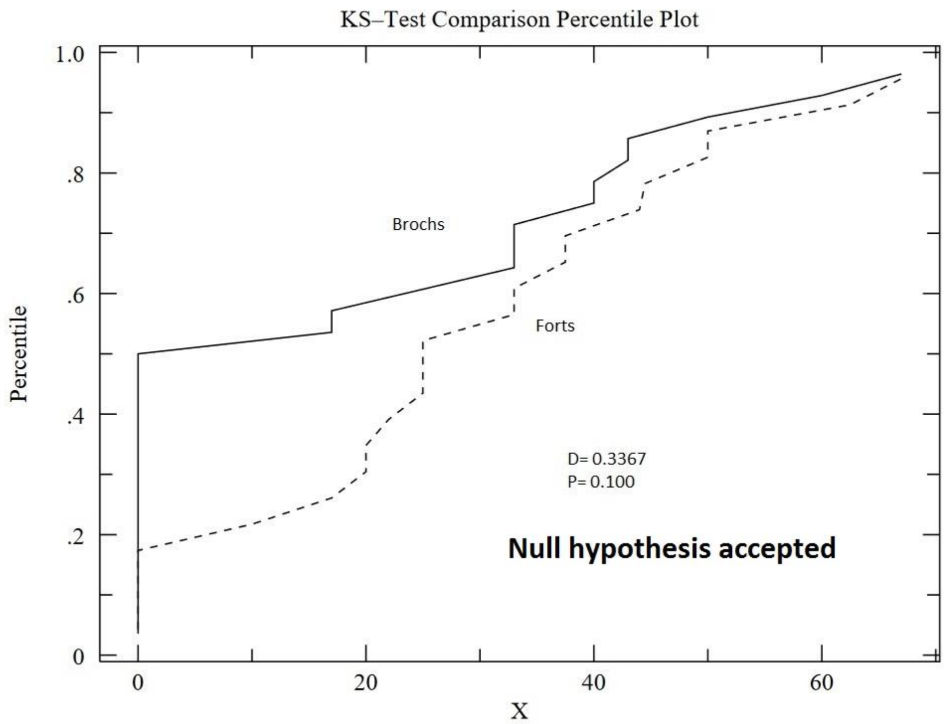

Figure 8.113: *K-S test comparing the percentage of duns visible from brochs and forts over a 10 km radius.*

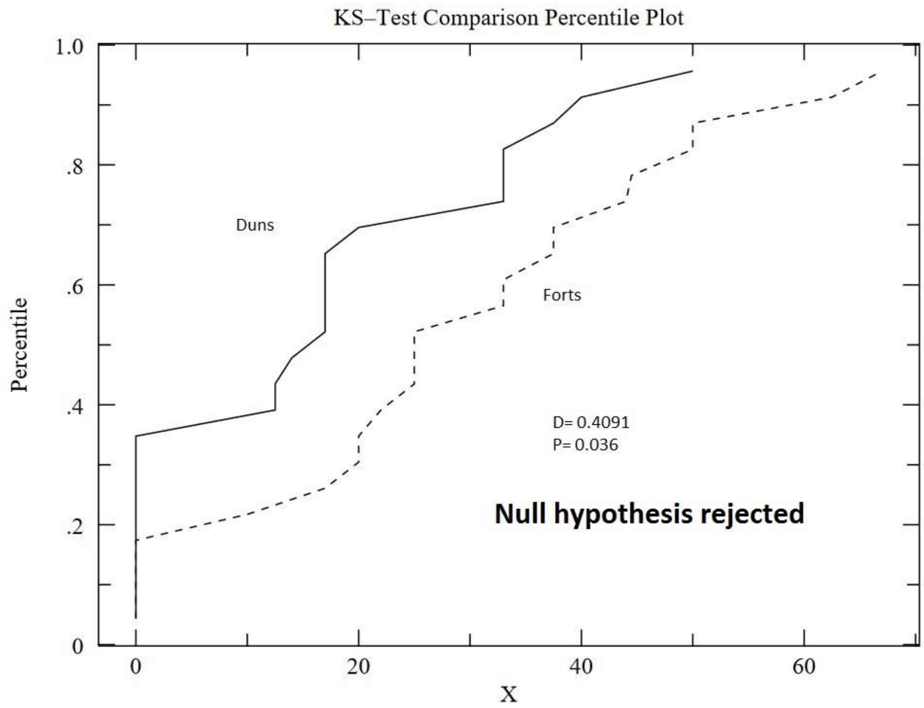

Figure 8.114: *K-S test comparing the percentage of duns visible from other duns and forts over a 10 km radius. Forts are more likely to be able to see a higher proportion of sites classed as duns.*

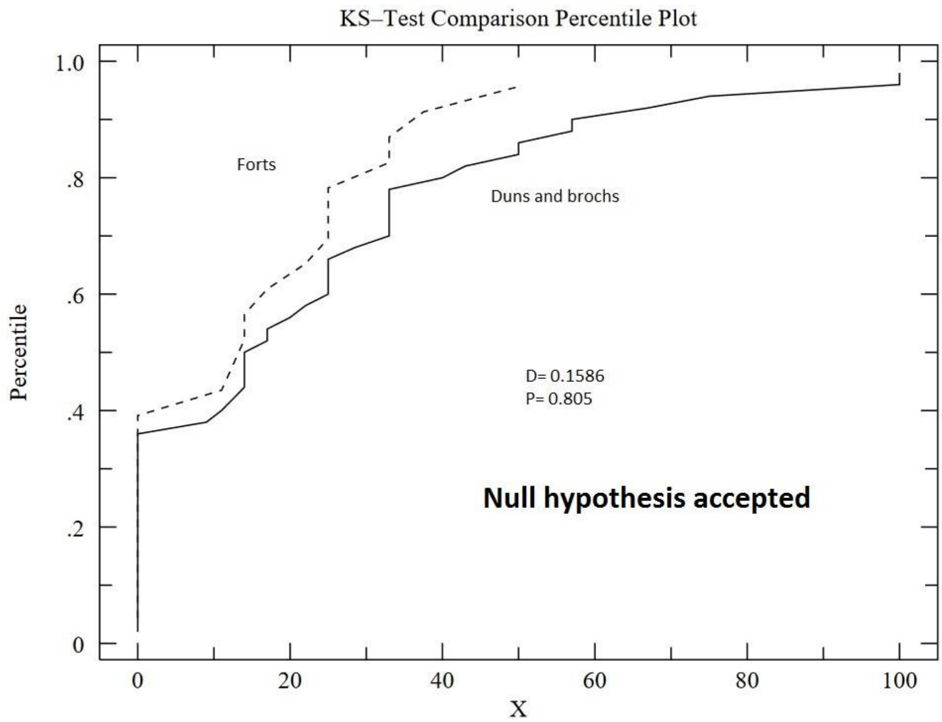

Figure 8.115: *K-S test comparing the percentage of brochs visible from duns/brochs and forts over a 10 km radius. Forts are not likely to be able to see a higher proportion of sites classed as brochs.*

If site intervisibility over a 5 km distance is explored it is apparent that size X sites have excellent visibility of other sites (Table 8.7). Dun Vlargveg, a small promontory enclosure south of Portree, and Dun Torvaig, also near Portree, can see all other sites within that radius (Figure 8.116). It is perhaps of interest that these are among the most isolated examples in terms of their proximity to other enclosed sites (Figure 8.9-8.12). Dun Chaich and Dun Beag Balmeanach, both high, precipitous enclosures, also have excellent visibility of sites in their vicinity. Sites of this internal area, if considered as a category, are less likely to have large areas of agricultural land nearby and their vision is less targeted on that land than size W sites (Table 8.3 & 8.4). Their visual focus instead appears to be more towards other sites, particularly when compared to structures of probable roofable size.

Among size Z enclosures, Dun Cruinn has comfortably the best visibility of other sites within the 5 km radius, with 6 sites, or 60% visible (Figure 8.116). It has previously been noted that Dun Cruinn's visibility is to the north, towards Loch Snizort Beag, rather than south in the direction of the natural landward approaches to the site, and it has excellent vision of the plethora of enclosed sites that surround the sea loch, including the small forts/dun enclosures of Dun Adhamh and Dun Eyre and the larger fort of Crag Nam Mann (See Figure 8.13, Figures 8.77 & 8.93). Notably, the only broch around the loch, Kingsburgh, is not visible, and neither is Dun Suladale to the west. Both these sites, particularly Dun Suladale, are among the most visible brochs in northern Skye, but both are just outwith Dun Cruinn's vision. Dun a'Cheitichin, the second most visible broch in the case study area after Dun Suladale, is just visible to the south, and it is the only broch visible (Figure 8.77). Similarly, Dun Santavaig and Creag Nam Mann, the other large enclosures in the Loch Snizort Beag area, also have very poor visibility of brochs in the area, and quite good visibility of enclosures larger than roofable size, despite those brochs being in very visible positions in the wider landscape. It may be the case that there is evidence for a system of intervisible and interconnected enclosures in this region, that is not centred around brochs. Creag Nam Mann and Dun Cruinn were clearly settlement sites at some point in their use. Both have evidence for occupation of their interiors (Figure 8.117), suggesting that they were domestically occupied, whether that was contemporary with the use and construction of the ramparts or not, and both show evidence for more than one period of use (REF MY DES article). Thus, they may be long term permanent settlement sites, occupying a similar position in prehistoric political structures as brochs, but spatially and/or chronologically distinct from settlement systems incorporating brochs.

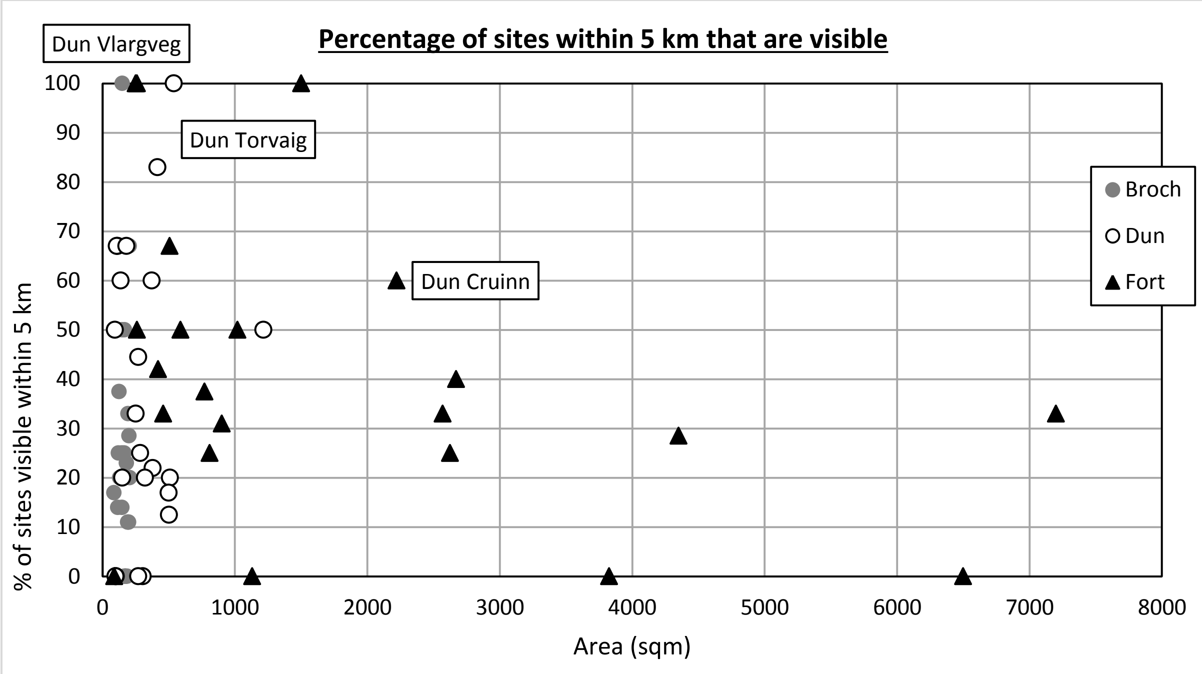

Figure 8.116: *The percentages of all sites within 5 km of enclosed sites that are visible.*

Figure 8.117: *Hut circles in the interior of Creag Nam Mann.*

8.3 Discussion

Consideration of the landscape position of enclosed sites on Skye relative to their size, morphology and architecture has produced a slightly clouded picture. Sites are perhaps less extreme in their placement with regards to using altitude or terrain to dominate landscapes than has been noted in Kintyre or Kirkcudbrightshire, and the largest enclosures are not necessarily the most strongly positioned. The broadly positive relationship between all sites and agricultural land (e.g. Tables 8.2 & 8.3) suggests that the majority of later prehistoric structures were domestic and agricultural in nature – Skye lacks apparently liminal sites that may have been impractical as permanent domestic structures like some of the promontory forts in the Rhinns of Galloway or extremely high hilltop enclosures such as Tap o'Noth in Aberdeenshire. The three traditional site classifications are not necessaily archaeologically sound - the division between dun and fort, in particular, is not at all clearly defined, even less so than in Kintyre. Taking into account shape, architecture and size, none of the GIS-based analyses attempted in this case study allow the author to disagree with the concept that brochs or complex Atlantic Roundhouses are a distinct site type and that these form a largely coherent grouping that is different from slightly larger enclosures. Categorising the enclosures larger than, and morphologically different from, these sites is more difficult. For MacSween (1985, 9-10), the division between 'dun' and 'enclosure' is one of roofability, resulting in her enclosure category being especially large. Her subdivisions of the extremely varied enclosure classification are based on architectural and morphological considerations and take little account of site size or prominence (Ibid, 17-18). MacSween's classificatory system acknowledges the difference between an enclosure encompassing an area of roofable size that is essentially a building and one that is likely to have contained within it one or several roofable structures, which is, in this author's opinion correct (see Chapter 7.3**)**. However a prominent, hilltop enclosure with a large fortified wall and space in the interior for forty house platforms also must be distinct from a more ephemeral site on a low knoll with room for perhaps two internal structures. The former may have been occupied by much more than one immediate family group, and has a size such that it could have been a community centre.

As elsewhere in western Scotland, enclosed sites in northern Skye form a continuum in terms of size, in this case from 90 m^2 to 7200 m^2. It is debatable whether there is a step-change in size at the top end of this continuum – Dun Santavaig is nearly twice as large as the next biggest convincing later prehistoric enclosure (Ullinish). Annait is closer than Ullinish to Dun Santavaig in size, but its status as a prehistoric fort is, in this author's opinion, in doubt. Accepted as such by both the Ordnance Survey and RCAHMS, the characteristics of the site are unusual compared to other inland promontory sites on Skye. It is far from land that is ever likely to have been of agricultural value (Figure 8.69), 90% of all land within 1 km and 37% of land within 200 m is higher than the site (Figures 8.25 & 8.30), and historically documented 1st and 2nd millennium AD activity is apparent at that location (RCAHMS 1928). If there is a large prehistoric fort here its location makes little sense, and it might be an unusual, possibly ritual or temporary refuge site of a kind that is arguably missing on Skye. Otherwise its earthworks may be of much later date. If this is the case, then Dun Santavaig may be comfortably the largest probable prehistoric enclosure. Even if this is so, its position does not mark it as different from sites like Ullinish or Dun Skudiburgh or Dun Cruinn, being on a locally prominent low hilltop close to the coast (e.g. Figure 8.38).

Sites above roughly 1200 m^2 in size (size Z) do share certain landscape characteristics. They are mainly more topographically prominent than smaller enclosures in their localities (Figure 8.30 & 8.34), despite being at comparatively modest altitudes (Figure 8.20). MacSween (1985, 17) has noted that most sites classed by her as enclosures were positioned to maximise defensive potential, and this local prominence, along with the absence of higher ground close to sites of this size suggests that they were deliberately defensively sited. They do not seem to be placed to be particularly visible in the landscape, however, or at least the 1200 m^2 size boundary is less apparent as a division with respect to visibility statistics. Some of the largest sites like Ullinish and Dun Skudiburgh are not very visible in the wider landscape of northern Skye, while slightly smaller examples such as Dun Mor and Creag Nam Mann are towards the upper middle bracket in terms of landscape visibility of enclosed sites in the case study area and are closer to many sites below 600 m^2 in this regard (Figure 8.44 & 8.45). As a group, however, sites over 1200 m^2 have much greater visibility of their 1 km localities than sites just slightly smaller than that (Figure 8.60) – it would appear that these larger enclosures do share visibility-related characteristics, but their focus is more local than, for example, the similarly-sized forts north of the Laggan in Kintyre. Perhaps this reflects the importance of visibility as a necessity for defence of the site itself, these forts being positioned to best see probable landward approaches to them rather than to be visually dominant in the landscape – Dun Cruinn may be an exception. The latter appears to be located to overlook Loch Snizort Beag and the farming land and plethora of enclosures that surround it (Figure 8.77). Sites of this size are generally positioned in sectors with consistently moderate to large areas of agricultural land, and have high visibility of that land, although their vision is not as targeted on it as enclosures of roofable size (Tables 8.2 & 8.3). The larger enclosed sites of northern Skye do, with the exception of Annait, appear to share certain landscape characteristics as a package that, along with the large scale or complex defences at forts like Dun Gerashader (Figure 8.118), Dun Skudiburgh and Dun Cruinn, makes this author suggest that they be something distinct from smaller enclosures, notably sites roughly 600 m^2 in size and below.

Figure 8.118: *Rows of large stones – external defences at Dun Gerashader, suggestive of large scale defences at some size Z enclosures.*

An internal area of 200 m^2 equates to a diameter of 16 m, slightly smaller than the 20 m diameter (or 314 m^2) that Romankiewicz, in her structural analysis of Atlantic Roundhouses, proposed as the maximum size for practicable roofing of an oval or circular drystone structure (2011, 197). In northern Skye there is a clear concentration of sites whose innermost walls enclose between 90 m^2 and 204 m^2, many of which have evidence for intramural galleries or cells, most of which are circular in shape, and some of which are surrounded by an outer ring of defences. Many of these have been conventionally described as brochs (e.g. RCAHMS 1928), and they include all structures that would now be considered as complex Atlantic Roundhouses (e.g. Armit 1996; Romankiewicz 2011). They are quite varied in their landscape characteristics, but certain trends do become apparent when sites of this size are treated as a group. They are very neutral in their positioning compared to larger enclosures – they are distributed throughout the landscape with little obvious regard to their distance from the sea or height above sea level (Figures 8.17 & 8.21), and a convincing argument could be made that they were constructed without their builders taking any particular heed of these factors. Coastal sites of this size are not any more visible from the sea than an average coastal location (Figures 8.105 & 8.107) – there does not seem to be any consistent relationship, across the dataset, between them and the sea. They are, however, concentrated in the parts of northern Skye with larger areas of farming land, locally they have more agricultural land nearby than larger enclosures, and views from sites of this size may be targeted at that land, especially at shorter distances (Tables 8.2 & 8.3). This fits with most authors assertions that complex Atlantic Roundhouses were primarily agricultural settlements (Fojut 1982; MacSween 1985, 13-14, 31; Armit 1996, 115; 2003, 79-87; Dockrill 2002, 159).

However, variation in position is also shown with regard to sites' topographic positioning and to their proximity to agricultural land. Sites smaller than 200 m^2 in area are less topographically prominent within 200 m of the site compared to enclosures of a larger size (Figure 8.32); many have large areas of higher land adjacent to them, and most are not in overtly dominating positions. Some, however, like Dun Ard An T-Sabhail in Minginish or Dun Suladale in the Loch Snizort Beag area are very visible and prominent both locally and in the greater landscape, and most are at least on knolls that are more prominent than an average location in the landscape. On the other hand, the probable complex Atlantic Roundhouses of Dun Feorlig and Glen Heysdal have as much or more land locally above them as below them. Variation in the landscape position of both complex and solid-walled Atlantic Roundhouses may be related to hierarchies between sites of this size, structures with outworks are demonstrably more prominent in the landscape than examples without. The data suggests that some sites may also have controlled or had access to larger areas of arable or better quality grazing land than others. This diversity is supported by how varied sites of this size are in most of the GIS-based analyses carried out in this case study, in contrast to larger enclosures. The evidence agrees with Armit's (2003, 84) assertion that hierarchies may have existed among Atlantic Roundhouses, rather than necessarily between Atlantic Roundhouses and a range of dependent structures (e.g. Dockrill 2002, 159-161). Also supported is Romankievicz's (2011, 83) argument that there is significant variation among complex Atlantic Roundhouses, and the lack of any obvious pattern in many of the landscape studies is in agreement with the idea that each site's position is a compromise between access to resources and defensive placement.

Enclosed sites roughly under 200 m^2 and over 1200 m^2 in size can be argued to form two convincing groups, when landscape position and internal area are analysed. The 25 sites that are intermediate in terms of area include 11 classed as duns and 14 classed as forts by the RCAHMS. There are only 5 sites between 600 m^2 and 1200 m^2 in size all but one of which are located either very close to, or with good visibility of, the sea. The exception, Dun Taimh, is middle ranking in both of these measurements, but extremely prominent and visible from land and probably has more in common with the enclosures above 1200 m^2. Dun Liath is an unusual site in that it is very large for a galleried structure on Skye. It, and Dun Vallerain, another site with evidence for complex architecture, are the first and third most visible sites from the sea in northern Skye and both, along with the island fort of Dun Maraig and coastal site of Dun na hAirde, are in this size range. It is probable that the uncommon interior area of these sites (for the case study region) was influenced by the topography of the specific coastal locations that it was deemed desirable to enclose. Dun Liath and Dun Vallerain, specifically, may have something in common with complex coastal promontory sites on Shetland, for example Ness of Burgi (RCAHMS 1946, 34-6), having internal cells and enclosing a similarly-sized interior.

The remaining sites, those between about 200 m^2 and 600 m^2 in size, may be comparable to 'dun-enclosures' a subdivision of the dun category proposed by Harding's (1984) based on roofability (Chapter 3.4). A break occurs in Skye, both in quantity of sites and shape of enclosed area, above 200 m^2 in size, with circularity of shape in plan restricted to below that internal area. It is therefore plausible to argue that, while structures larger than this may conceivably have been roofed, most are likely not to have been, and even if they were they are distinct architecturally from the multitude of regular circular Atlantic Roundhouses. Their defences mostly follow the edges of the knolls or ridges on which they are placed, using the natural topography rather than imposing a standard circular form upon their location in the landscape. In some cases, e.g. Dun Connavern or Dun Beag Balmeanach, there is internal evidence for footings of hut circles. They therefore fit more with Harding's dun-enclosure group than with his dun-houses (e.g. Harding 2006, 131 & 138). At the upper end of this size range are a number of sites, many classed as forts, that are very visible in the landscape and quite topographically prominent, such as Dun

Adhamh, Dun Eyre and Dun Beag (Figure 8.26 & 8.46). Some slightly smaller sites, like Tom Na H-uraich, Dun Connavern and Cnoc A'Sga, share comparable or even more prominent positions (Figure 8.26), and are on available evidence morphologically quite similar, but are all classed by the RCAHMS as duns. Towards the lower end of this size range are several coastal promontory sites, for example Kraiknish, Dun Grianan or Dun Vlargveg, with poor land visibility (Figure 8.46). If considered as one group all sites between 200 m^2 and 600 m^2 (size X) are less centrally located with regard to agricultural land (Table 8.2), and many examples, particularly towards the lower end of the size range, are spatially isolated from (Figure 8.9 & 8.10), but visually linked to (Table 8.7), other sites. Thus there are a large number of structures of this size that may have been removed from the most populated areas of Skye at time of occupation, implying, perhaps, a higher chance that they were in use temporarily or seasonally than other sites.

Complexity is added to interpretations of later prehistoric social structures by the probability that more ephemeral unenclosed settlement sites, such as at Coile a Ghasgain or the later Bronze Age post-built roundhouses at Kiltaraglen, were also in use throughout the Iron Age. Perhaps the distribution of such sites may be linked to that of souterrains on Skye, most of which are limited to the north of the island (Miket 2002). The Snizort area, surprisingly perhaps, is empty in Miket's map of souterrains on the island (Miket 2002, 86-7), although this distribution pattern may be due to differential survey coverage, a possibility acknowledged by the author. Adding another layer of complexity is the dearth of 1st millennium AD settlement evidence in northern Skye. Small rectilinear enclosures like Dun Totaig or Druim nan Slochd are not dissimilar morphologically from sites in Argyll that have been reliably dated to later than the 5th century AD (e.g. Dun Fhinn, Kildonan Point). Dun Skudiburgh could be interpreted as having a summit citadel with several lower enclosures and it would not be inconceivable to place it alongside excavated 1st millennium AD examples like Trusty's Hill in Kircudbrightshire. Thus some of the drystone settlement record may actually reflect post complex Atlantic Roundhouse habitation.

We then may have four categories of drystone enclosed site in northern Skye:

- *Atlantic Roundhouses*, likely to be farming settlements, with evidence for some hierarchy between them. All fall into size class W in this case study. Most have been classed as brochs by the RCAHMS, but a few as duns (e.g. Dun Ardtreck).
- *Fortified enclosures* that appear to be sited both for proximity to farming land and local defence, but do not dominate the landscape in the same way as hilltop forts

in other parts of Scotland. In some cases these take the form of inland promontory forts. Most are size Z in this case study with a few size Y sites and all have been classed as forts by the RCAHMS.

- *Coastal promontory sites*, or small islet sites, enclosing areas slightly larger than the Atlantic Roundhouses, located in outlying regions. These are mainly size X in this case study, with some size W sites. Some have been classed as forts by the RCAHMS, some as duns.
- A series of *smaller fortified enclosures*, often quite topographically prominent, with considerably poorer local visibility of land than the larger enclosures. Very visible in the wider landscape, but do not dominate or control their localities in the way that the larger enclosures do. They are mostly size X in this case study, and have mainly been classed as duns by RCAHMS, with a couple of forts.

MacSween (1985, 25; 31) has posited that the larger fortified enclosures may primarily have been for the corralling and protection of livestock, which is certainly possible, although there is no evidence for or against this besides the apparent absence of drystone structures in the interior of sites like Dun Santavaig. Their central location with respect to farming land and moderate altitude are strong arguments for their potential as permanent human settlement sites, with an associated role related to the penning of animals. That these locations were considered suitable for settlement at some stage is supported by hut circles in the interior of large enclosures such as Dun Cruinn, Creag Nam Mann and Dun Skudiburgh.

The lack of a visual relationship between these sites and complex Atlantic Roundhouses apparent in the intervisibility analyses must be of significance. If the large fortified enclosures are hypothesised as for protection of broch-dwellers' livestock, then it seems inconceivable that intervisibility between the site types should be so unusually low. There is a strong possibility that many of the complex Atlantic Roundhouses and larger fortified enclosures were not contemporary. On the other hand, the extremely high intervisibility between sites classed as duns and forts suggests that most of the smaller enclosures that do not fit into the Atlantic Roundhouse category may have been in use at the same time as the larger fortified enclosures. The presence of small circular solid-walled structures classed as duns inserted into the interior of several of the larger enclosed sites also suggests a link. It must, however, be acknowledged that these quite ephemeral solid-walled structures, like at Dun Cruinn, may represent re-use of the interior of a fort after its abandonment. Strong evidence exists that solid-walled roundhouses were precursors to complex Atlantic Roundhouses, particularly in the Northern Isles (e.g. Gilmour 2002, 55-6), and most fortified enclosures/forts that have been excavated in Atlantic Scotland have been dated to the early to mid 1st millennium BC. Thus, a social structure based around the inhabitants of small enclosures and several large communal sites may have given way to one focused on dispersed segmentary societies in the later 1st millennium BC, based on the strong evidence for complex Atlantic Roundhouses likely chronological horizon being between about 400BC and 100AD. This earlier Iron Age social structure may have been based around 'clusters' of enclosed sites in favourable regions such as Loch Snizort Beag, Balmeanach and Loch Bracadale with small isolated enclosures representing temporary occupation of outlying areas. The latter may fit with a series of oval and sub-rectangular sites suggested by Gilmour to be early Iron Age transhumance sites (Gilmour 2002). Subsequently, a system based around monumental structures controlling particular regions of farming land may have developed, with competition or hierarchy expressed through variable monumentality, which may have incorporated the construction of outworks and the use of more prominent landscape positions.

9. Kirkcudbrightshire

9.1 Introduction

The area chosen for the final case study is part of the historic county of Kirkcudbrightshire in Dumfries and Galloway (Figure 9.1). The area covered by the case study is a maximum of 53 km N-S by 51 km E-W, and follows the historic boundary between Kirkcudbrightshire and Dumfriesshire beginning at the mouth of the River Nith near present day Dumfries and continuing north and west along the western edge of Nithsdale (Figure 9.2). No contention has been made that the historic county represents a political or geographical division in later prehistory. The boundaries chosen in the north and west are arbitrary divisions, designed to include the majority of prehistoric enclosed sites while reducing the size of the case study region to lessen the processing power required for GIS analysis. The resulting study area is the largest of the case studies at 1857 km^2, and, compared to the other case study regions, contains the greatest number of enclosed sites (n = 98) for which sufficient data is available to include them in GIS-based analyses.

Dumfries and Galloway provides a significant contrast to Kintyre and Skye. Traditionally considered part of Piggott's Solway-Clyde province with respect to its Iron Age archaeology, separate from the Atlantic province further north (Piggott 1966), it is also often included with the Borders and Southern Scotland in syntheses of later Scottish prehistory (e.g. Hingley 1992; Harding 2004a) and many authors have overwhelmingly focused on sites in Dumfriesshire, east of the River Nith, when discussing the archaeology of South West Scotland (e.g. Banks 2002; Harding 2004a). The RCAHMS' Eastern Dumfriesshire survey (RCAHMS 1997) contributed greatly to this imbalance, significantly increasing knowledge of the archaeological landscape of that area, while Kirkcudbrightshire and Wigtownshire suffered in comparison. In 2000, Cowley drew attention to a significant difference in enclosed settlement forms east and west of the Nith, and, recently, Cavers (2008; 2010) has posited that much of the later prehistoric settlement record of Galloway may have more in common with Atlantic Scotland than the Borders. As the part of Galloway that is closest to Dumfriesshire and the Borders, it is possible that present-day Kirkcudbrightshire may represent a region where later prehistoric Atlantic and Border settlement traditions met. If Cavers is correct, it may be of interest to see if similar patterns exist in terms of enclosed area, site morphology and landscape position here as in the other, more traditionally 'Atlantic', case study areas.

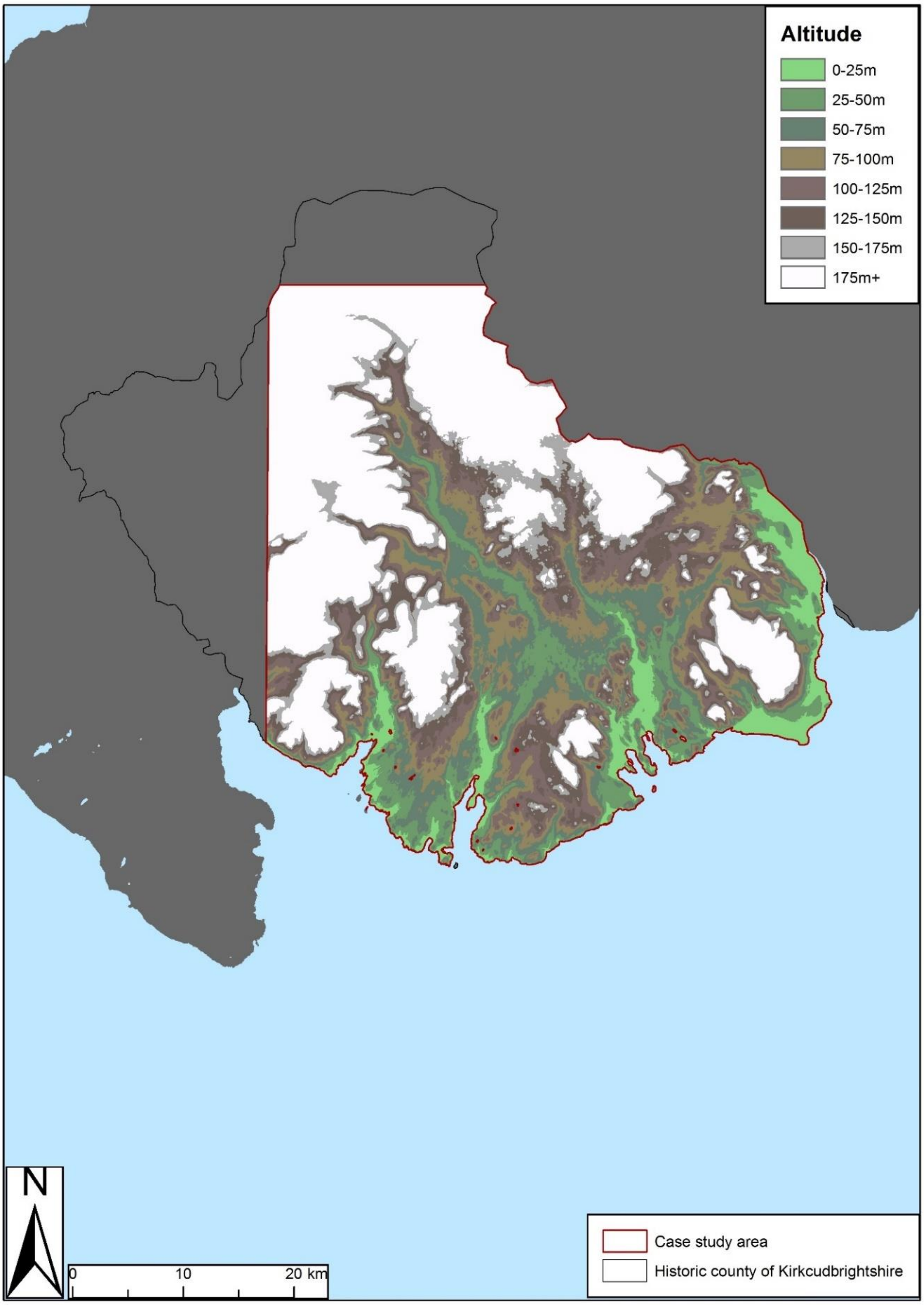

Figure 9.1: *Extent of case study area and topography.*

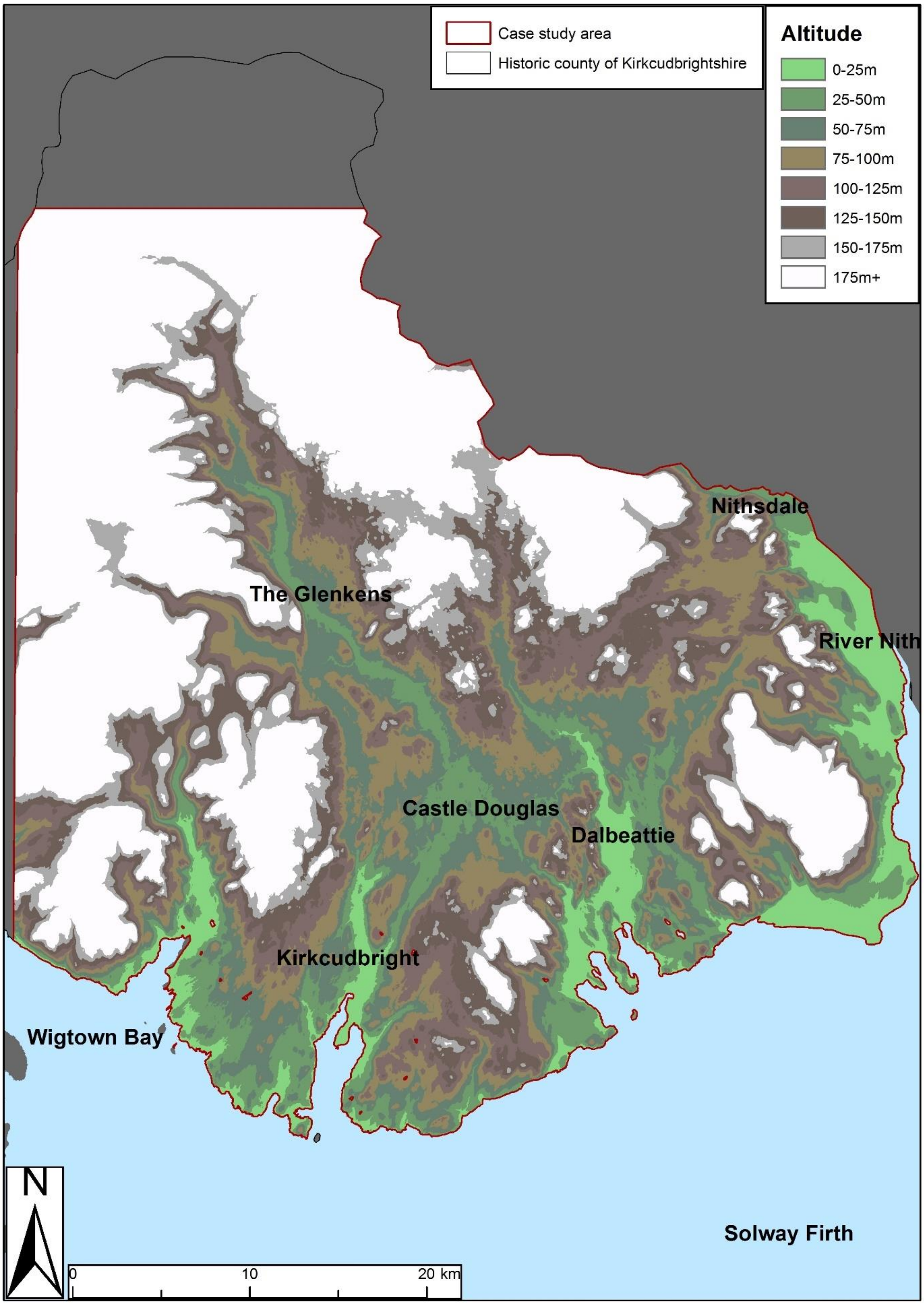

***Figure 9.2**: Case study area, topography and places mentioned in text.*

9.1.1 Geology and soils.

The area covered by the case study can be divided between upland and lowland zones, with the north west of the county particularly mountainous (Figure 9.2), the highest point being Merrick at 843 m OD. The lower-lying areas are mostly river valleys, comprising Nithsdale, the Glenkens and the valleys of the River Dee and Urr Water – there are numerous rivers and burns traversing the region from north to south. The southern coastline is strongly indented and has been continually subjected to strong erosional forces leading to the formation of rocky promontories and sea caves. Greywackes formed in the Silurian period (423-444 million years ago) comprise the predominant geology, with igneous intrusions dating to the Devonian and Silurian periods apparent in mountainous parts of the west and south east (Figure 9.3). Notably, much of Kirkcudbrightshire is free of drift deposits (Ballantyne & Dawson 1997, 31), contributing to the soils being slightly less fertile than the Rhinns of Galloway or Eastern Dumfriesshire. Soils in the upland regions of the north and west have been subject to considerable deterioration, with widespread peat cover, while the lower-lying areas in the centre, south and east tend to comprise mildly acidic brown forest soils where they are well-drained (Figure 9.4). This lower ground has been greatly improved and historically has supported a largely pastoral economy supplemented with limited production of barley and oats (Campbell 1991). Compared to the region covered by the Skye case study, Kirkcudbrightshire is undoubtedly very fertile.

Woodland cover in Galloway in the early Holocene was probably quite extensive, consisting of oak, elm and hazel (Tipping 1994, 12). Pollen diagrams indicate that much of the uplands was devoid of trees by the end of the 1st millennium BC, with intensive deforestation of Galloway beginning from around 500BC (Birks 1972). Today the uplands have been replanted with trees which, along with peat cover, has contrived to obscure much of the archaeology that may have been present. Likewise, agricultural improvement of the lowlands may have removed surface archaeology in more intensively farmed areas (Cowley 2000).

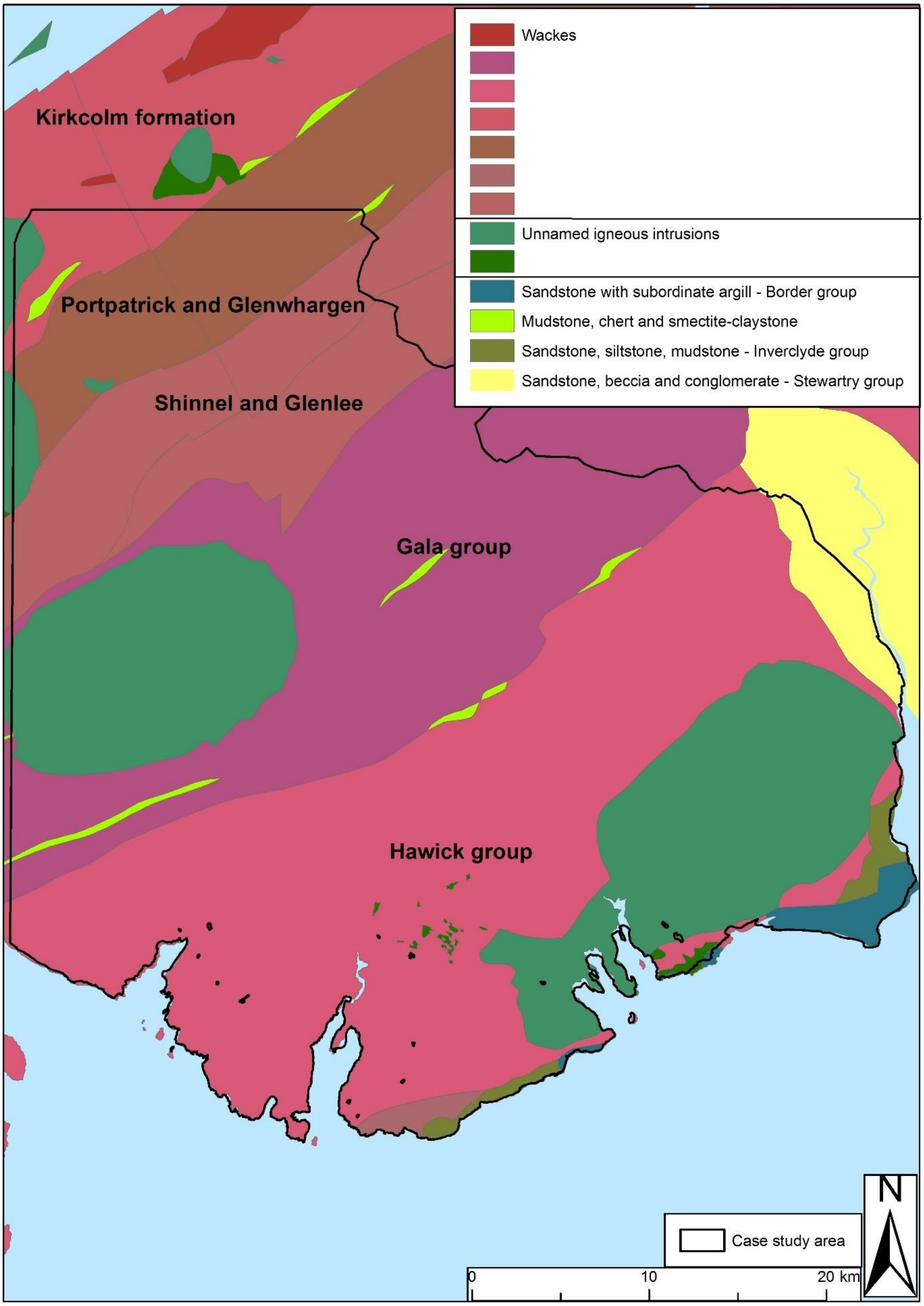

***Figure 9.3**: Underlying geology (Data from British Geological Survey ©NERC. All rights Reserved)*

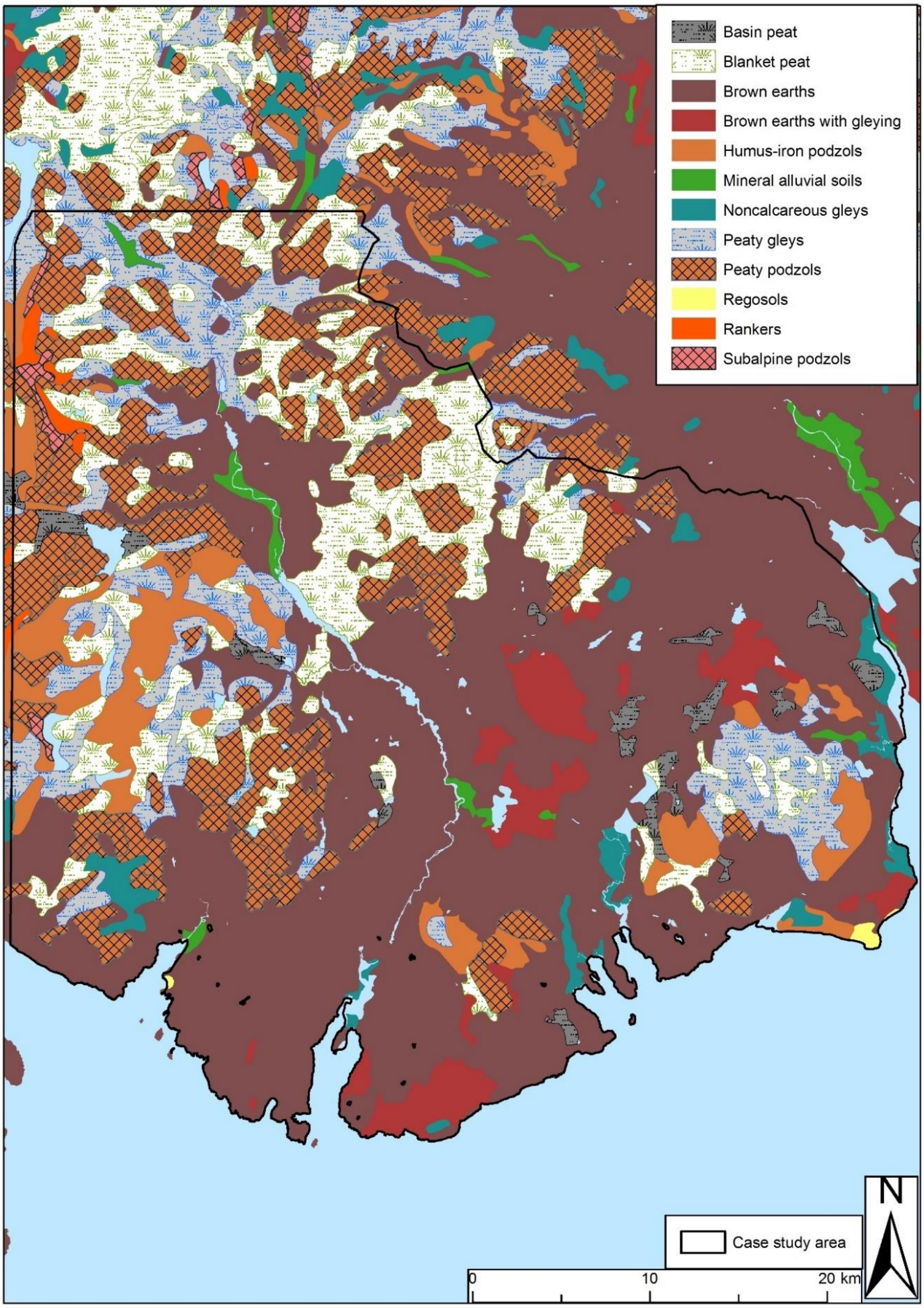

Figure 9.4: *Soil classification (Data from Soil Survey of Scotland Staff. (1981). Soil maps of Scotland at a scale of 1:250 000. Macaulay Institute for Soil Research, Aberdeen).*

9.1.2 Archaeological background

Evidence for Mesolithic settlement of Kirkcudbrightshire has been found close to the coast, and along rivers and the edges of lochs, an excellent example being the large concentration of flint implements and tool-making waste at Starr *(63614)*, by the head of Loch Doon in the Glenkens (Gregory 2000, 2-6). The abundance of Neolithic monuments in the region are similarly distributed, chambered tombs being located in mostly coastal and riverine areas (Ibid, 8). Cursus monuments, henges and mortuary enclosures are particularly concentrated in Nithsdale, many of which have been identified by aerial investigation (Cowley & Brophy 2001, 52-3). Stone circles are widespread west of the Nith, with a more westerly distribution than the earthworks, and Gregory (2000, 18-19) has divided Kirkcudbrightshire and Dumfriesshire into megalithic (westerly) and non-megalithic (easterly) regions.

Bronze Age round cairns are widespread throughout the case study area, and tend to contain cremation burials (Gregory 2002, 57-8). Surviving non-funerary sites dating to this time period are found where the uplands meet the river valleys and the surviving distribution of hut circles, many of which may be Bronze Age, is likely to reflect abandonment of agriculturally marginal higher ground during the early 1st millennium BC, with evidence for similar structures on lower, more sheltered land removed by later agricultural activity. Cowley has also noted that recorded hut circles are clustered in regions that have been intensively surveyed by RCAHMS, and that they have only ever been identified on unimproved ground (Cowley 2000, 168-9). It is probably for this reason that burnt mounds have a remarkably similar distribution to the hut circles in Kirkcudbrightshire, with large groupings on high ground north and west of Gatehouse of Fleet and north of Castle Douglas (Gregory 2002, 67). Some enclosed settlement sites may also date to this time period, and these likely include several examples that have been analysed in this case study. A hoard of middle Bronze Age rapiers was found in the primary ditch fill of the earthwork at Camp Hill, Drumcoltran *(64919)*, when excavated in the early 19th century, providing a very early date for a site that may appear superficially similar to an Iron Age fort. Gregory has convincingly argued that some of the largest forts in the region may be late Bronze Age on the basis of the dating of larger hilltop sites elsewhere in Scotland and northern England (2002, 70). In Kirkcudbrightshire there are a number of very prominent forts that enclose a much greater area than the remainder of sites. It is not inconceivable that some of these forts, like Moyle Hill *(64886)* or Giant's Dike *(64189)*, may have been constructed and occupied prior to the Iron Age.

Most archaeological information presently available about the later prehistoric settlement record of Kirkcudbrightshire comes from three sources, two of them over a century old. For many enclosed sites the plans drawn by Frederick Coles in the early 1890s are the only detailed pictorial representations available, while his site reports are among some of the more comprehensive made for the forts of the region (Coles 1891; 1892; 1893). The RCAHMS Inventory was completed prior to the First World War and it constitutes the most complete published listing of later prehistoric sites in the historic county (RCAHMS 1914). A ground-breaking piece of work for its time, building on the theoretical groundwork of Coles and David Christison (1887; 1898), as well as the earlier Berwickshire survey (RCAHMS 1909; Chapter 3.1 & 3.2), the subsequent expansion in our knowledge of British prehistory and the theoretical developments that have occurred through processual and post-processual archaeology have understandably rendered some of its interpretations and methods outdated. Finally, the RCAHMS Marginal Lands Survey (RCAHMS 1950-9), undertaken in the 1950s due to natural and anthropogenic threats to monuments, has provided very detailed empirically-derived information about some of the sites in the case study. Its coverage is uneven, however, with certain forts, like the large hilltop sites of Dunguile Hill *(64482)* and Moyle Hill receiving more exhaustive treatment, while little new information was added to existing Inventory survey reports for many other enclosed sites. It did, though, find many new sites, and, for the first time in the region utilised vertical aerial photography to identify previously unknown or invisible earthworks (Halliday & Stevenson 1991, 132).

Galloway as a whole was considered a black hole, in terms of the development of its Iron Age research, by Haselgrove et al in 2001. Subsequently the settlement archaeology of the western half of Galloway – Wigtownshire - has received some archaeological attention, with two PhD theses focused primarily on the area (Cavers 2005; 2010; Poller 2005). Since then the excavations of Cavers, Crone and Henderson at crannog and lochside settlement sites at Cults Loch (*276231, 61697;* Cavers & Crone 2010) and Black Loch of Myrton (*62815;* Cavers & Crone 2015) in the Machars has, together with aerial investigations carried out by Cowley and Brophy near Stranraer, greatly advanced knowledge of Iron Age Wigtownshire. The crannog excavation at Loch Arthur is the only such recent work from Kirkcudbrightshire (Henderson & Cavers 2012), and few later prehistoric enclosed sites have ever been excavated in the case study area. The enclosed settlement record has not been categorised empirically by measurable characteristics like in Argyll – instead sites have been classed as forts, settlements, earthworks, enclosures or duns mostly on the basis of the assessments of RCAHMS or Ordnance Survey investigators. These assessments have mainly used subjective criteria, such as the essential criterion for dividing forts from settlements in Kirkcudbrightshire being the surveyor's impression that the builders of forts were overarchingly concerned with defence (Cowley 2001, 173). Cowley has subdivided the settlement grouping into three types based on site area and morphology; small stone-walled curvilinear enclosures, large curvilinear enclosures and rectilinear enclosures. However, even with this more nuanced classification, the division between the smallest, most ephemeral, of the forts and the larger curvilinear enclosures within the settlement category remains uncertain (Cowley 2001, 171-4). Cavers has distinguished between 'homesteads', palisaded enclosures/cropmarked settlements, promontory enclosures, and fortified enclosures or 'hillforts', in his analysis of Wigtownshire, although it is again unclear what criteria determine the separation of larger settlements from the hillforts (Cavers 2010, 78-87).

The region covered by the case study contains a variety of likely later prehistoric enclosed settlement sites, from small, potentially roofable examples to large hilltop enclosures enclosing a much larger area than almost all of those in Skye or Kintyre (For distribution maps see Figures 9.6-9.13). Construction techniques varied across the corpus of sites, some enclosed sites having drystone walls and many others being defended by earthen dump ramparts. A few sites show evidence for typically Atlantic architecture, for example, the intra-mural galleries of the dun at Castle Haven *(63623).* Promontory enclosures are widespread along the Solway coast, varying in size from barely big enough to fit one structure (McCulloch's Castle *65369*) to large enough to enclose several roundhouses (e.g. Borness Batteries *63990* or Castlehill Point *64891*). A survey of these promontory enclosures by Toolis (2003) hypothesised that they were similar conceptually to inland settlements, that they made use of easily-defended coastal positions for the same purpose that many inland sites were positioned on hilltops, and he argued that there was evidence for hierarchy among them (2003, 62). For Toolis, these promontory sites were an adaptation to the topography of the region, using easily defensible or prominent coastal positions for settlement, rather than a cultural marker of shared traditions with the Atlantic seaboard. This position is not in agreement with that of Cavers (2010, 89-90) or Henderson (2007, 129; 164-6), both of whom have considered promontory sites in this region as an example of architectural affinity between Galloway and other parts of western Britain, such as the Isle of Man or the Hebrides.

Six enclosed sites in the case study have previously been subject to excavation. Childe's investigations at Carminnows (*64379;* Figure 9.11) uncovered little evidence for human activity in a limited excavation, apart from the stone and turf ramparts themselves (Childe 1936). Since that time the monument has been mostly submerged by the creation of a reservoir. A section cut through the defences of Doon Hill, Balig *(64409)* in the early 1980s likewise turned up no finds, no dating evidence and little information about site usage or occupation (Crone 1981). The cliff-edge fort of McCulloch's Castle was more comprehensively excavated by Scott-Elliot in 1961 and 1962, with evidence for multiple phases of rampart, including a palisade, and structures within its tiny 250 m^2 interior (Scott-Elliot 1964). A hearth provided datable finds in the form of Samian pottery and a Roman period stone palette although there is no way to determine whether this evidence represented initial construction of the defences. The small, inland, homestead or stone-walled settlement site of McNaughton's Fort *(65010)* was also excavated by Scott-Elliot (et al 1966) and found to comprise a stone and earth rampart surrounding a contemporary or later palisaded enclosure, with a minimum of one roundhouse inside. A radiocarbon date was obtained for the palisade, which put that phase of the site's construction in the latter centuries of the 1st millennium BC. It may be significant for our understanding of similar enclosed sites in Kirkcudbrightshire that both McNaughton's Fort and McCulloch's Castle show evidence for multiple phases of enclosure. What excavated evidence that we have may indicate that certain locations were occupied and re-used for many centuries.

Two sites classed by the RCAHMS as forts, the Mote of Mark *(64911)*, at Rockcliffe on Rough Firth, and Trusty's Hill *(63641)*, near Gatehouse of Fleet in the western part of Kirkcudbrightshire, are neither particularly large nor especially impressively sited, compared to many Galloway forts. Both have been excavated multiple times and, despite their sizes and locations, have been described as pre-eminent sites or regional centres (e.g. Curle 1914; Toolis & Bowles 2013). The Mote of Mark was excavated in the early decades of the 20th century (Curle 1914), and the 1970s (Laing & Longley 2006), with Trusty's Hill excavated in the 1960s (Thomas 1961) and the 2010s (Toolis & Bowles 2013). In contrast to the general supposition that hillforts are Iron Age (Chapter 3.3), both have been dated to the mid to later 1st millennium AD, although Trusty's Hill, in particular, has evidence for 1st millennium BC occupation of the hilltop (Toolis & Bowles 2012; 2013). Curle's excavations at the Mote of Mark unearthed a rich assemblage of imported pottery and glass and a large quantity of metalworking debris, suggesting that the site was an important centre of trade and manufacturing in the Early Historic period. The more limited investigations at Trusty's

Hill by Toolis and Bowles revealed similar pottery and bronze working debris, albeit on a smaller scale, and the site has been interpreted by the excavators as a nucleated fort that may have been 'of royal predominance' over other forts in Dumfries and Galloway, as Dunadd was in Mid Argyll (Toolis & Bowles 2012, 10-11).

While this is a justifiable interpretation of excavated evidence, it is notable that the Mote of Mark and Trusty's Hill are the only two hilltop forts in Galloway that have been subject to comprehensive excavation. It may be that what made the two sites significant enough to attract such archaeological attention in the first place is that both show evidence for vitrification of their defences, a particular interest of many early 20th century excavators (Chapter 3.1). Trusty's Hill, also, is unique in that it has some of the most southerly examples of 'Pictish' carvings in Britain adjacent to its entrance. Vitrification of ramparts does not automatically mark a site out as special – it is the destruction of a timber-laced stone rampart by fire, and suggests that a fort was destroyed by violence or as part of some kind of ceremony (e.g. Ralston 2006, 149-163). It is not necessarily an indication that an enclosure had a function or status that was different from other fortified sites. Similarly, the carvings at Trusty's Hill, while they have attracted archaeological interest, do not conclusively mark the site out as special – they may be markings left by invaders or an expression of the individual identify of an independent community. It may be, then, that there are many more assemblages equivalent to those of Trusty's Hill or the Mote of Mark among the unexcavated enclosed sites of Dumfries and Galloway. Equally, the dating of these forts shows that along with the Iron Age and Later Bronze Age settlement records, a portion of the enclosed sites in this case study may be late 1st millennium AD, further complicating attempts to interpret later prehistoric landscape patterns and site interrelationships.

Figure 9.5: *Rock art at Trusty's Hill.*

Sites classed as settlements by the RCAHMS are concentrated mainly in two areas – north of Castle Douglas and on the high ground to the east of Kirkcudbright (Figures 9.9-9.11). Forts are more widely spread, although, even on comparatively low ground, there are notable gaps in the distribution, specifically the valley of the Water of Ken, the lower ground surrounding and to the west of Castle Douglas and land to the east and south east of Dalbeattie (Figures 9.7, 9.8 & 9.11). Visible prehistoric enclosed sites are absent in some areas probably due to differential survival of remains, with many of the vacant areas being more intensively improved lowland regions of better farming land. Many cropmarked sites have been identified in Nithsdale, such as two large enclosures at Carruchan *(65694 & 65695)* and a probable ditched settlement at Laneside *(65717)*, in an area immediately west of Dumfries that is devoid of visible surface prehistoric settlement. However, the pastoral nature of modern agricultural activity in much of Kirkcudbrightshire and the damp climate has restricted the potential in many areas for cropmark formation outside what Cowley has described as ‘honeypots’, such as the valley of the Nith (Cowley 2000, 167).

The very largest enclosed sites are distributed evenly throughout the lower lying parts of the region chosen for the case study. Indeed, it may be interesting, given the main aim of this thesis, to examine whether the forts over 0.9 ha, so regularly placed in a distribution map (Figure 9.13), combine their size with very prominent positioning within their surrounding regions. An outlier among the large sites, in the north of the case study area, is a 1.4 ha irregular, stone-walled enclosure associated with hut circles at Carseglass (*64276;* Figure 9.11), which does not fit morphologically with the more massively defended and regularly shaped forts in the southern part of Kirkcudbrightshire. It, along with Cnoc Araich in Kintyre (Chapter 7), serves as a reminder that there is no *a priori* reason that enclosed sites of this size should be prominent in their landscapes.

9.1.3 Maps

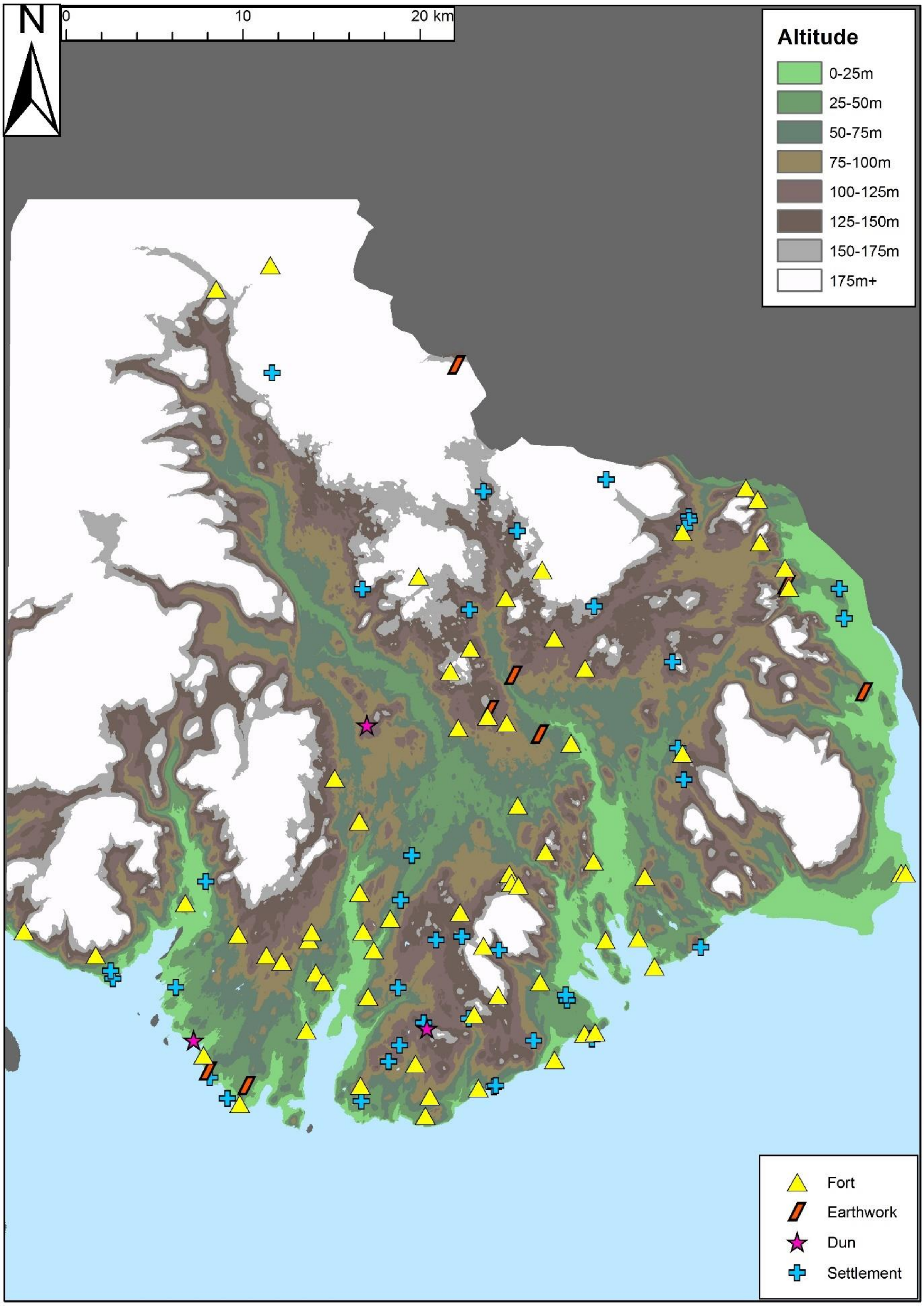

***Figure 9.6**: All likely later prehistoric enclosed sites.*

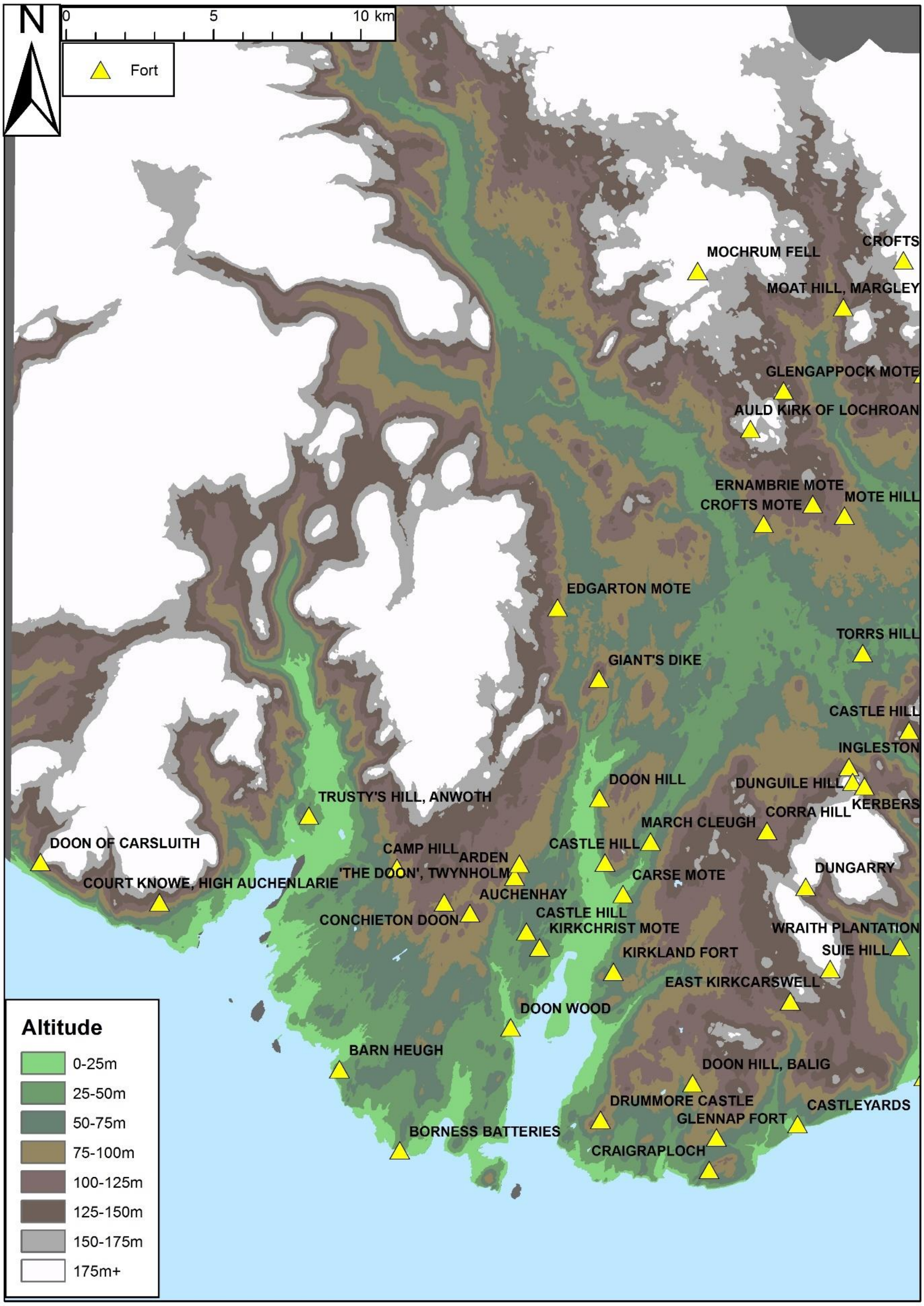

Figure 9.7: *Sites classed as forts in western Kirkcudbrightshire.*

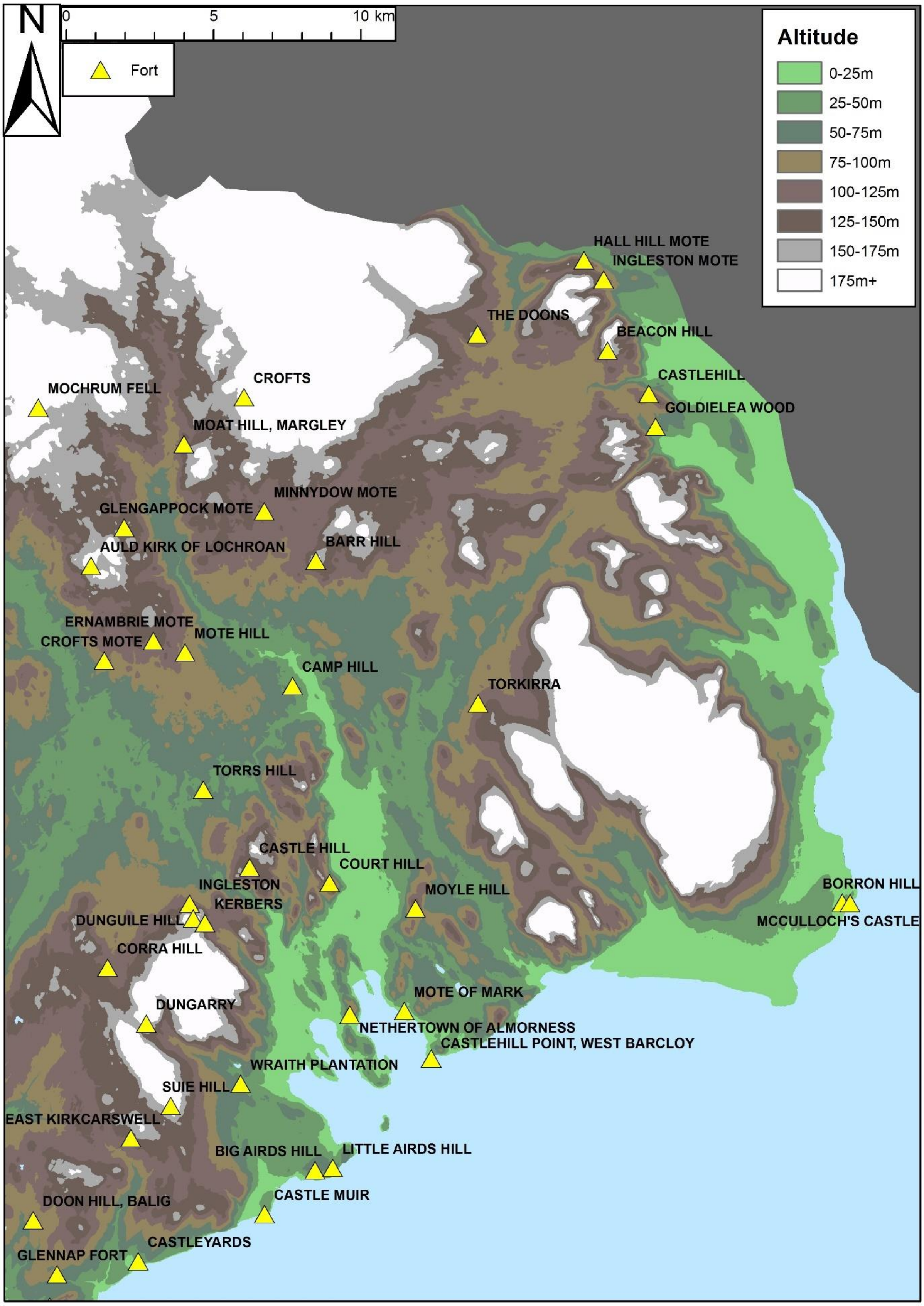

Figure 9.8: *Sites classed as forts in eastern Kirkcudbrightshire.*

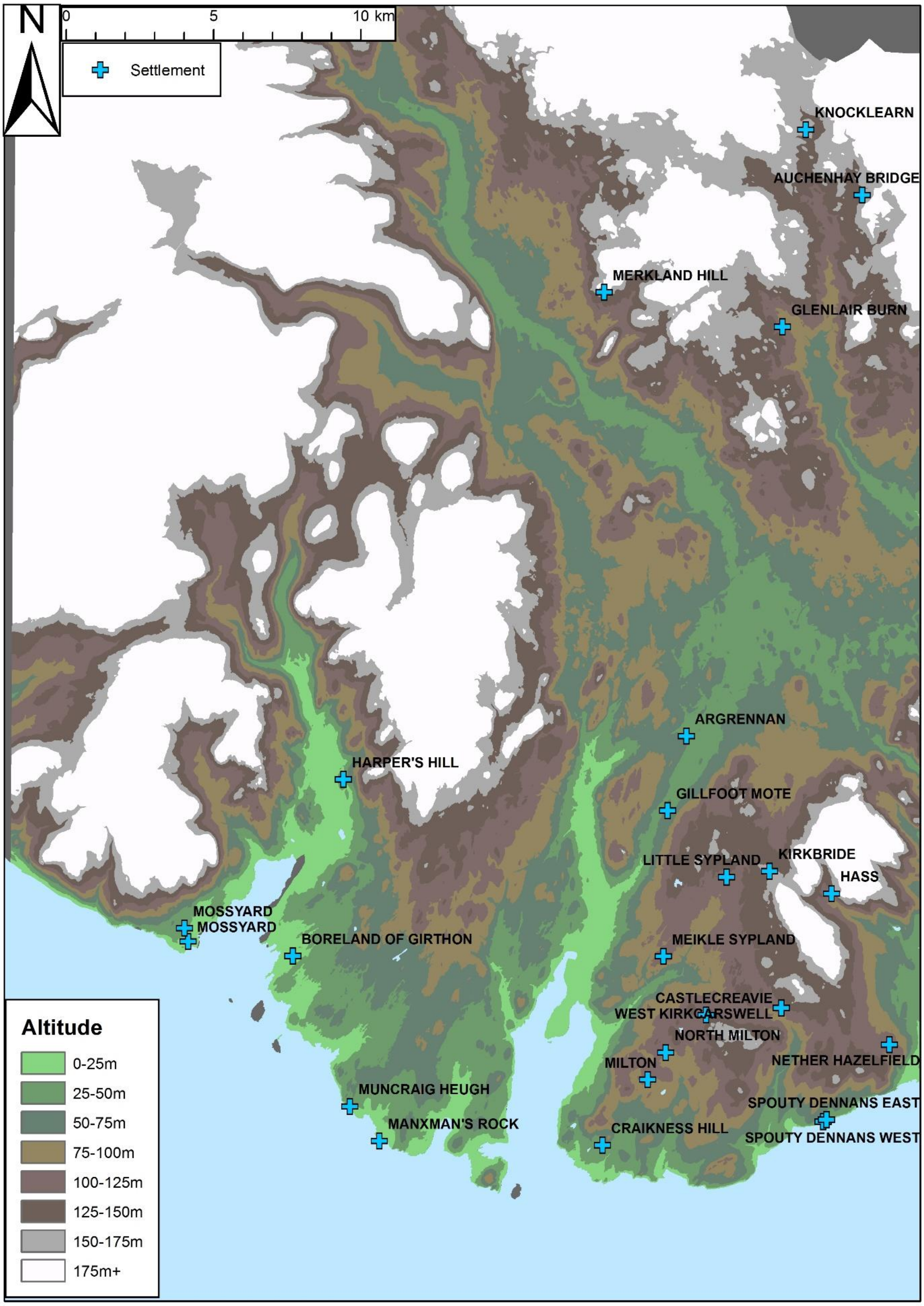

Figure 9.9: *Sites classed as settlements in western Kirkcudbrightshire.*

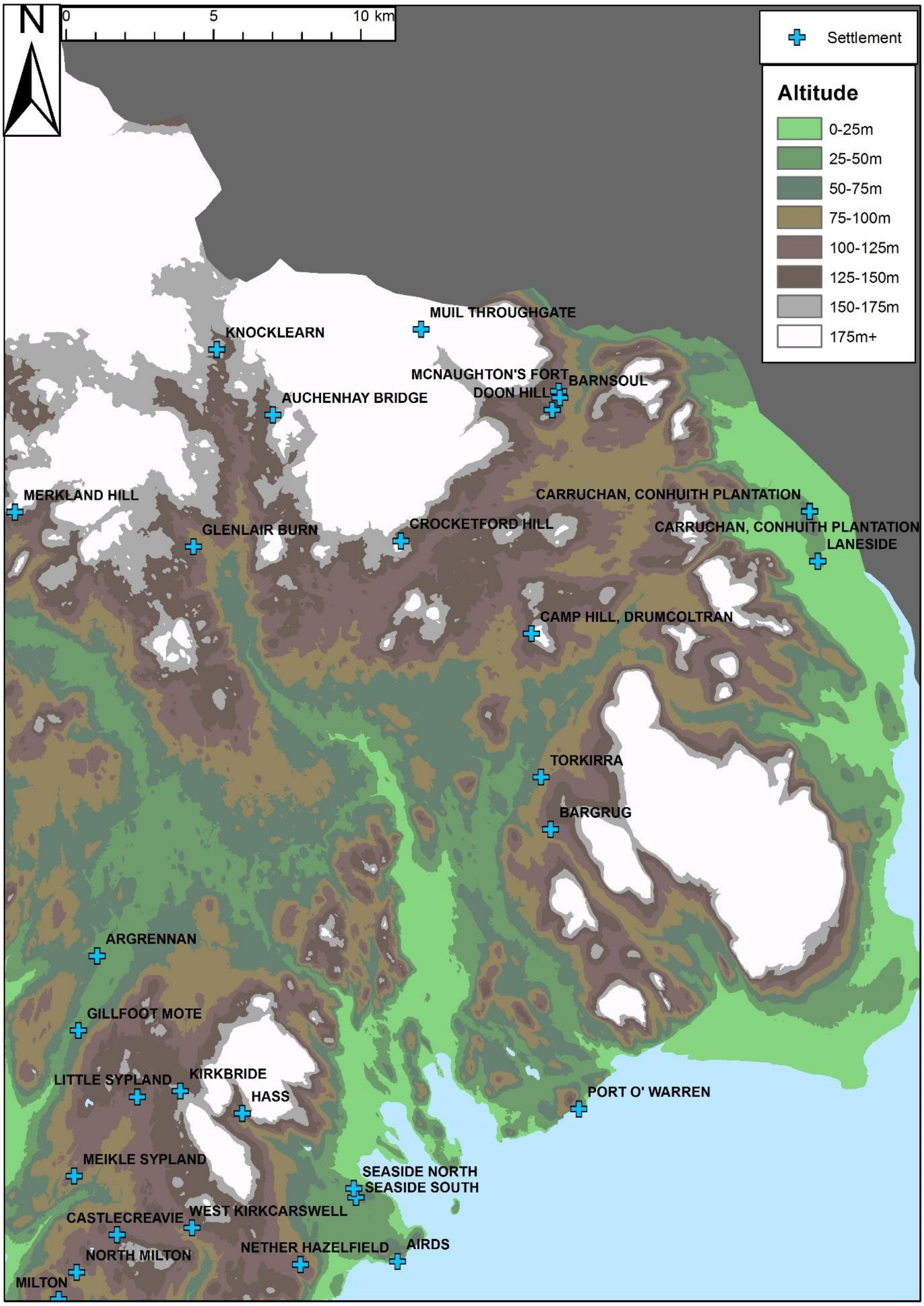

Figure 9.10: *Sites classed as settlements in eastern Kirkcudbrightshire.*

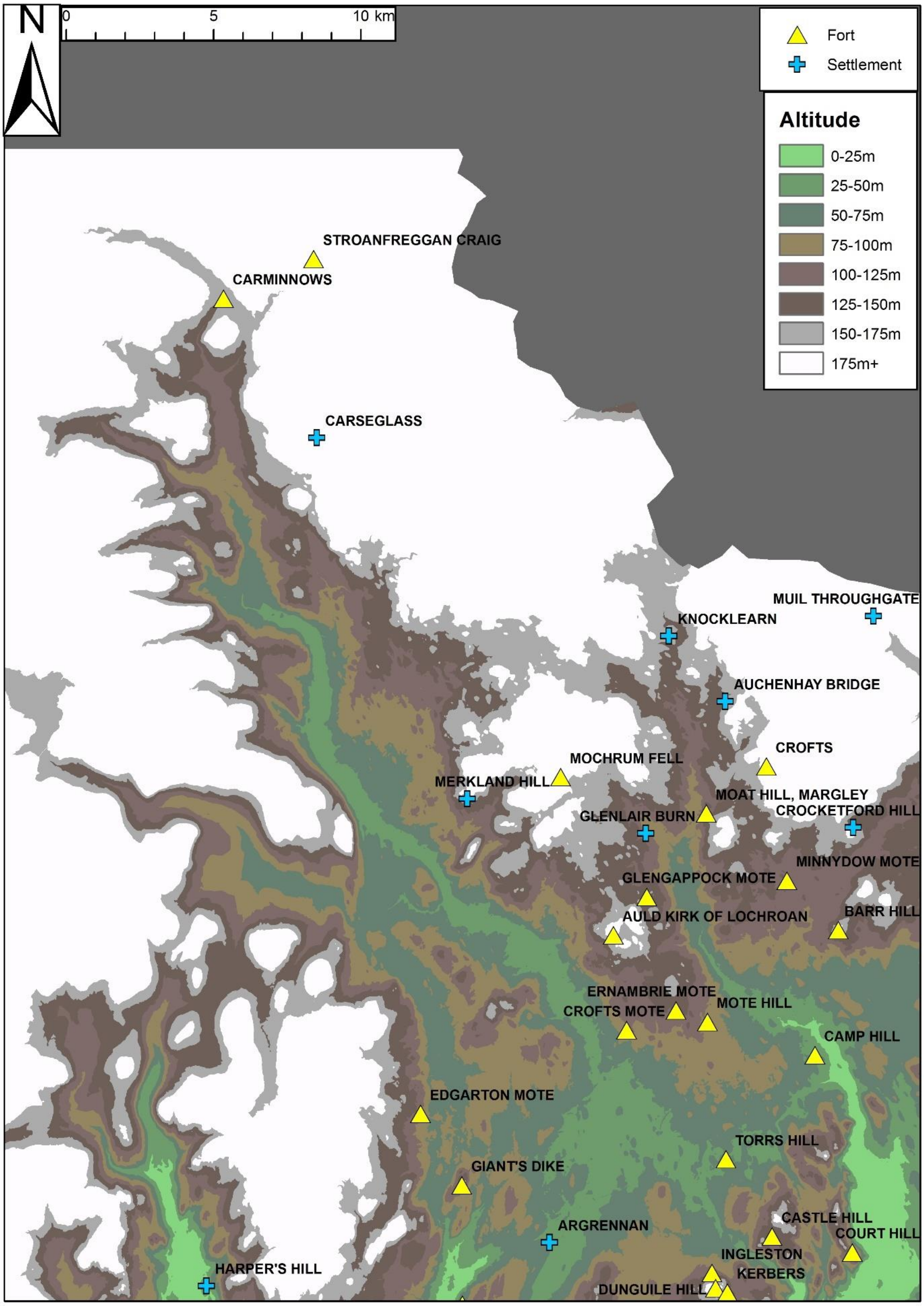

Figure 9.11: *Sites classed as forts and settlements in northern Kirkcudbrightshire.*

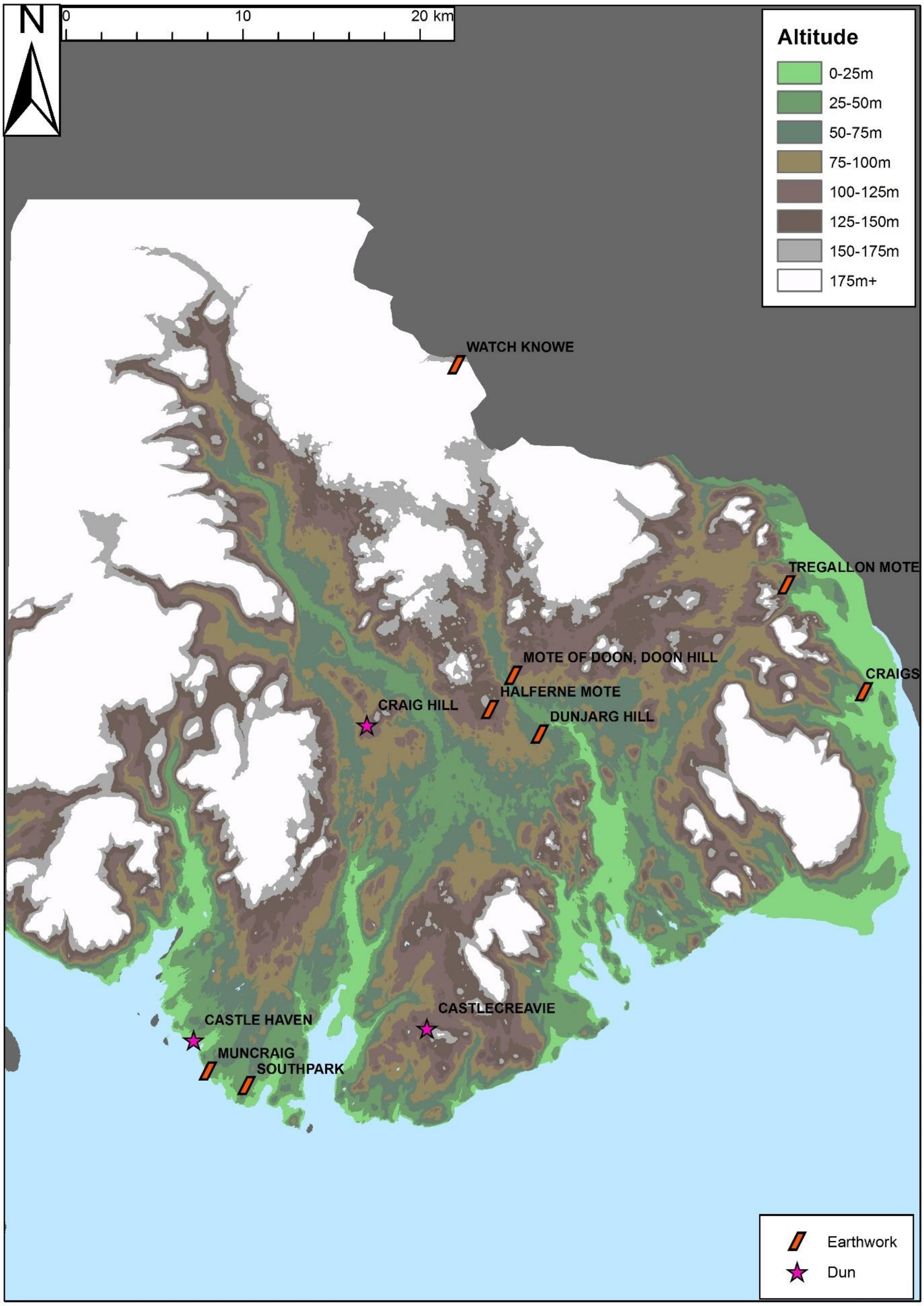

Figure 9.12: *Sites classed as duns and earthworks in Kirkcudbrightshire.*

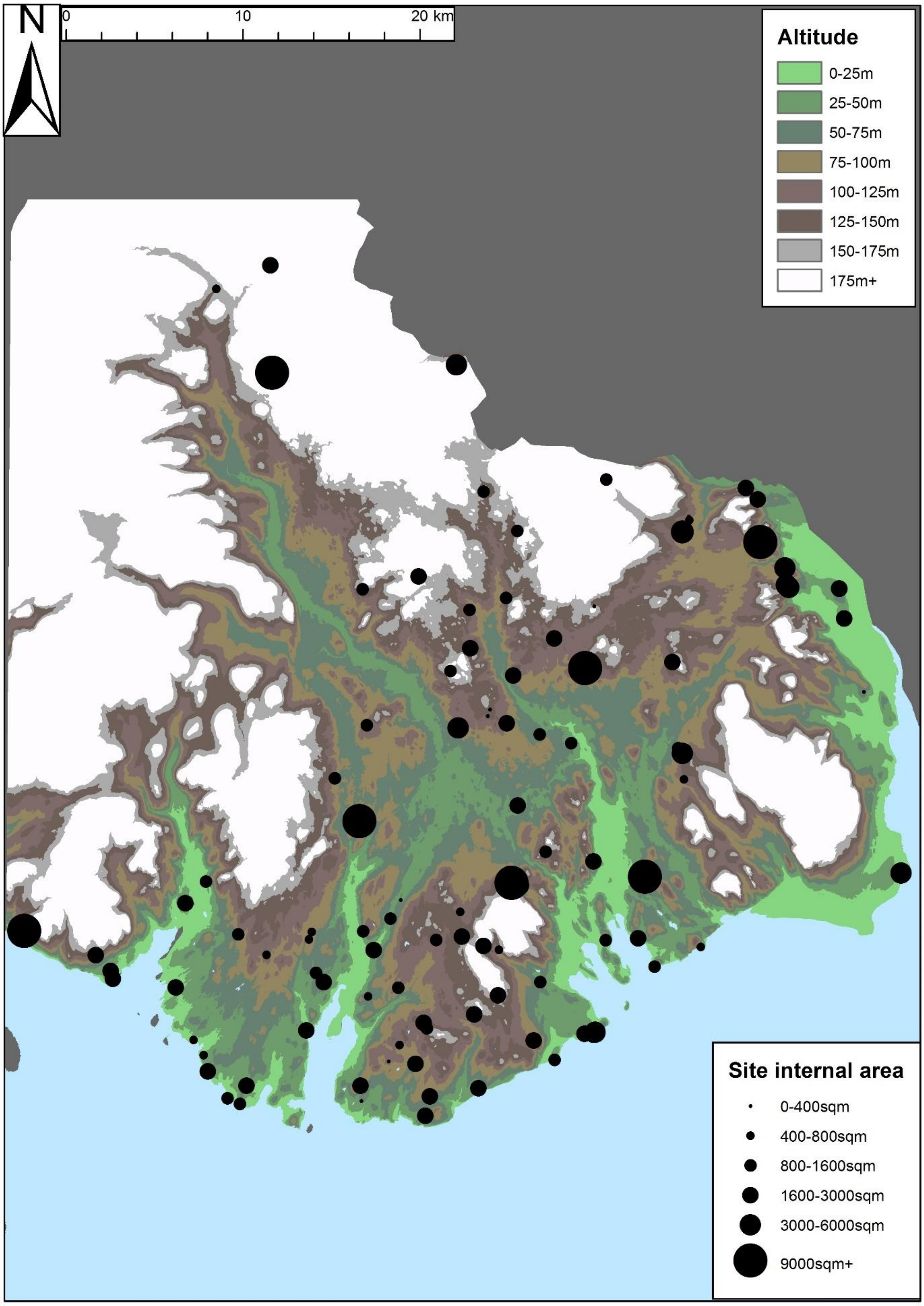

Figure 9.13: *Enclosed sites in Kirkcudbrightshire by internal area.*

9.2 GIS-based analyses.

Four size ranges have been determined on analysis of the data from Kirkcudbrightshire and have retrospectively been assigned a separate label to aid in explanation. These are:

- *Size Q: 0-600 m^2.*
- *Size R: 600-1200 m^2.*
- *Size S: 1200-5000 m^2.*
- *Size T: 9000 m^2+.*

As with the Kintyre and Skye case study chapters, these size types were created after data analysis was carried out. They have been chosen to represent possible observable patterns in the data, although, in this case study, such patterns have not been as clearly identified. The division between size S and size T, however, represents the step change in site internal area identified in Chapter 5.

Sites classed as earthworks that have been judged by the author to be potential prehistoric settlement sites have been included in the case study.

9.2.1 Site altitude and distance from the sea

Examination of distribution maps of enclosed sites in Kirkcudbrightshire (e.g. Figure 9.6) suggests that they are less restricted to coastal areas than, for instance, Skye (Figure 8.9), albeit they are absent in much of the northern and western parts that are furthest from the coast. Over 50% of sites are located within 5 km of the sea, a much greater proportion than the 21% of the case study's land that lies within that distance. There is also a higher percentage of sites than proportion of land within 5-10 km and 10-15 km of the coast (Figure 9.14). Similarly, 25.5% of sites are less than 1 km from the coast, compared to 5% of total land (Figure 9.15).

There is little obvious variation between RCAHMS site categories in this regard, and sites classed as forts and settlements are statistically identical as datasets with respect to their distance from the coast (Figure 9.18). Of size T sites only one, the Doon of Carsluith, is within 2 km of the sea, with the majority over 5 km away (Figure 9.16). The plurality of sites are located up to 20 km from the sea, with a less obvious preponderance for locations directly adjacent to the coast compared to the other case studies (Figure 9.16 & 9.17; Figure 7.10 & 8.17).

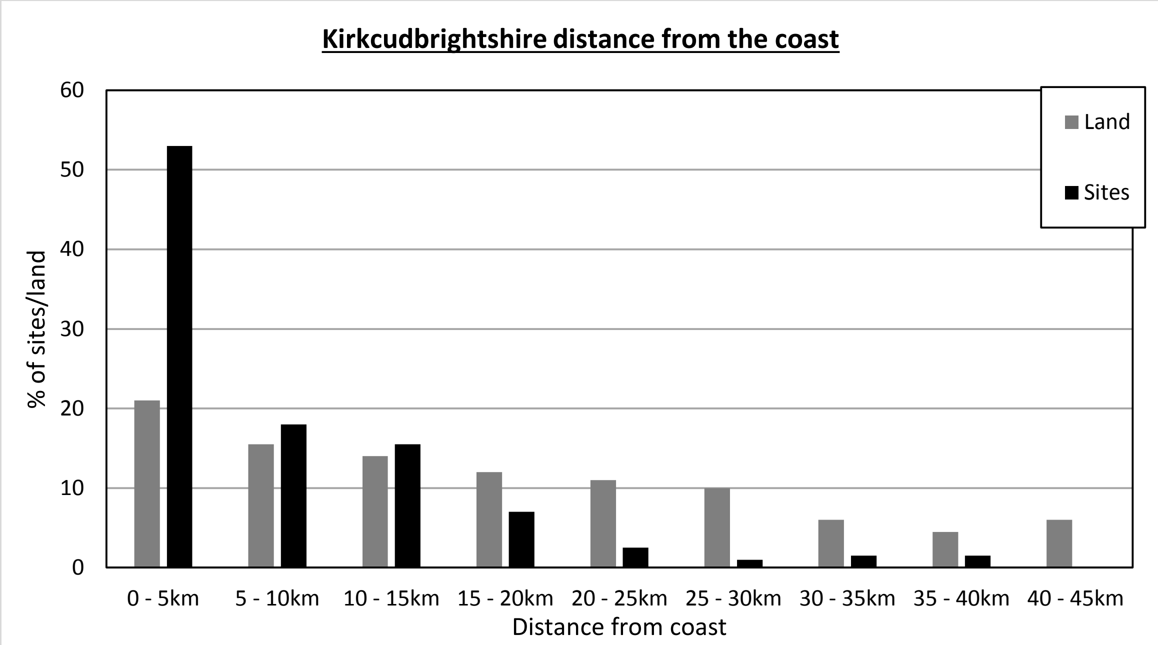

Figure 9.14: *Distance of sites from the coast. This is compared to the percentage of land falling into each distance category. Sites are placed disproportionately close to the coast if a null hypothesis is assumed between proportion of sites and land.*

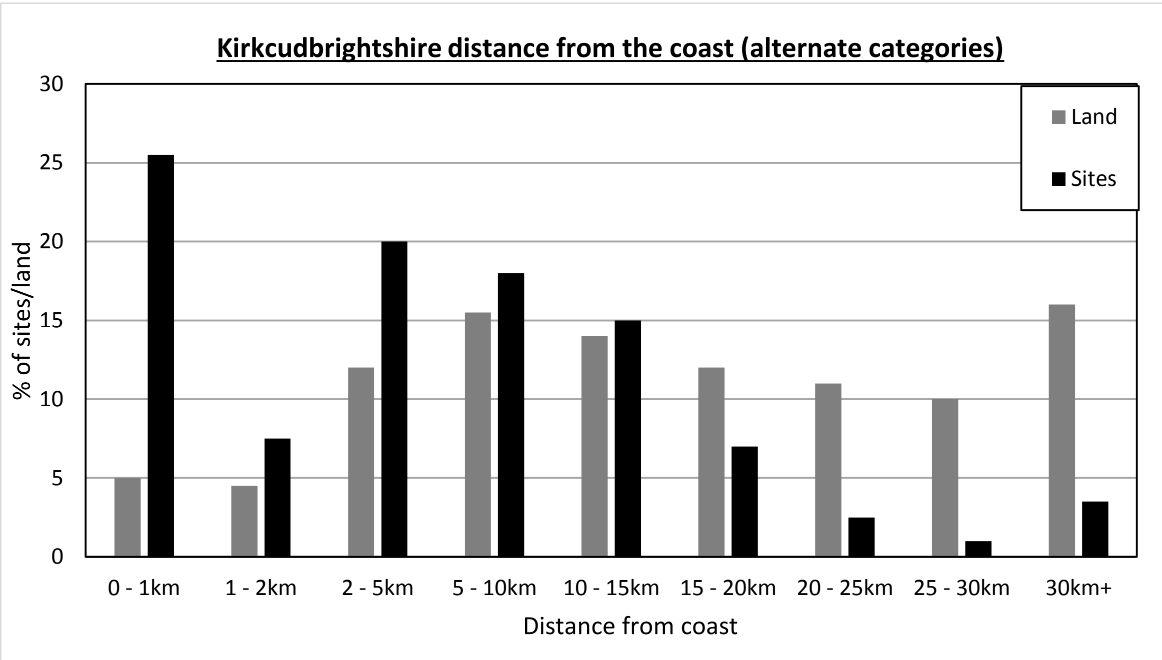

Figure 9.15: *Distance of sites from the coast. This is compared to the percentage of land falling into each distance category. Alternate categories used for better analysis of sites closer to the coast. Sites are placed disproportionately within 1 km of the coast if a null hypothesis is assumed between proportion of sites and land.*

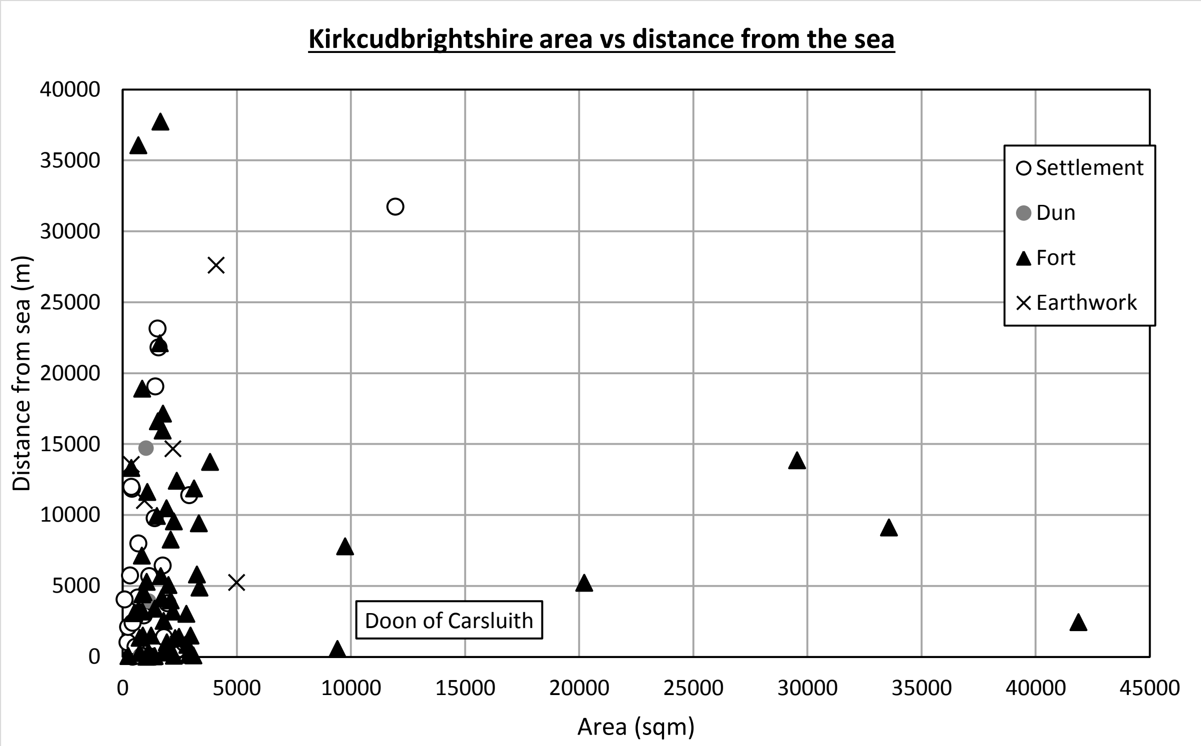

Figure 9.16: *Site area compared to distance from the coast. Type T sites are not close to the sea, except Doon of Carsluith.*

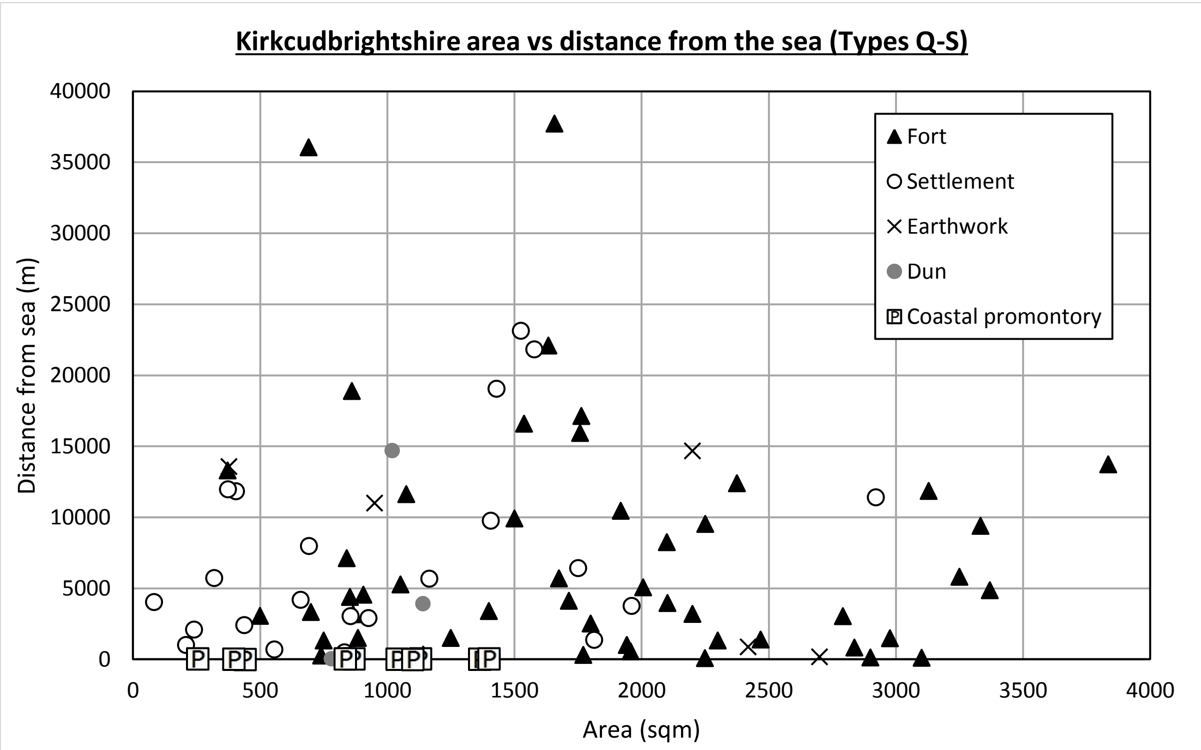

Figure 9.17: *Site area compared to distance from the coast. No patterns related to RCAHMS site class or size are apparent.*

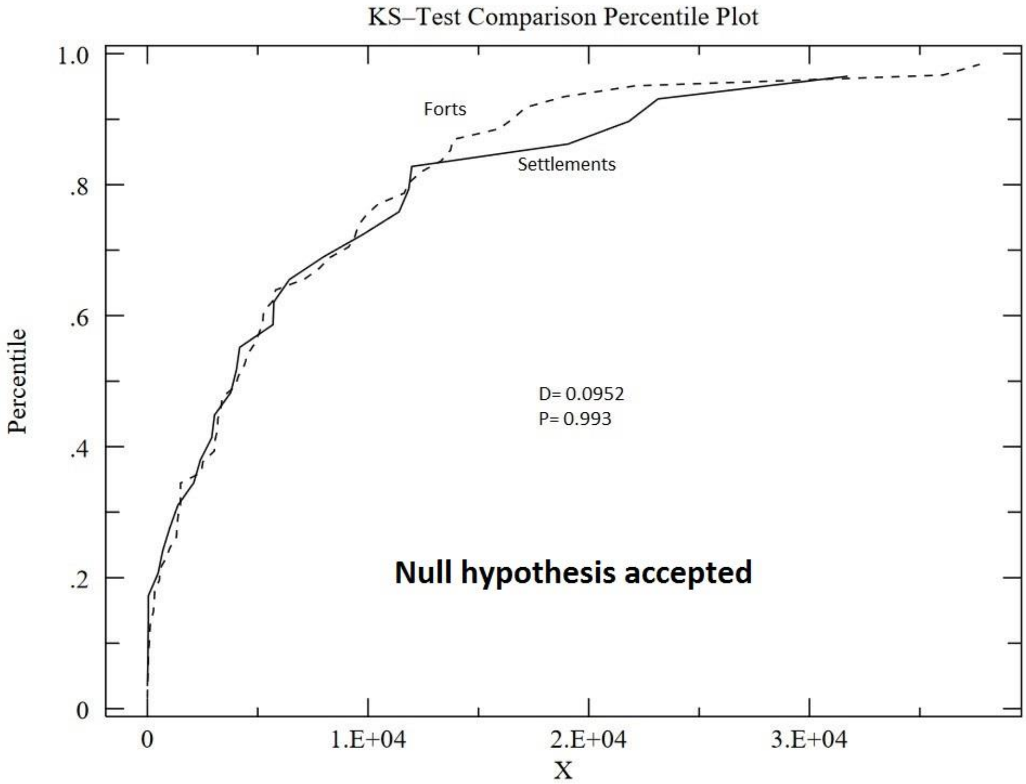

Figure 9.18: *K-S test comparing distance of settlements and forts from the coast. The two site classes do not differ.*

The highest enclosed site in Kirkcudbrightshire is the fort of Mochrum Fell at 252 m OD (Figures 9.7 & 9.20). Over a quarter of land in the case study area lies above this height (Figure 9.19). Sites show a particular inclination for altitudes between 25 m and 175 m OD, with over 20% of enclosed sites located between 100 m and 125 m above sea level, compared to just 9% of total land falling into this altitude range. Size T sites are among the highest examples in the case study area, with every large enclosure positioned above 150 m OD (Figure 9.20). The ten biggest sites in Kirkcudbrightshire (seven size T and three size S) are statistically extremely likely to be placed at higher altitudes than both the remainder of sites (Figure 9.23), and the next ten largest sites when the datasets are subject to Kolmogorov-Smirnov testing (Figure 9.24). The biggest enclosures therefore comprise a distinct group both in terms of area enclosed and altitude above sea level.

The scatter charts depicting site area and altitude also suggest that there is a group of sites classed as forts between 1500 m^2 and 2100 m^2 in size that are, other than the size T enclosures, the only sites above 200 m OD (Figure 9.21). These are all drystone sites – Mochrum Fell, Auld Kirk of Lochroan, Dungarry, Suie Hill and Stroanfreggan Craig - and they appear to form a grouping in terms of their size and altitude (Figure 9.21 & 9.22). Notably these sites are all typically oblong or oval in shape, and the majority consist of more than one enclosure. Many sites classed as forts are in higher positions than all but the very highest settlements, but the distributions are not statistically likely to differ significantly as datasets (Figure 9.25). Multivallate enclosures are located at higher altitudes than univallate (Figures 9.22 & 9.26), which may suggest that multivallation in Kirkcudbrightshire is an elaboration or strengthening of an already prominent position, rather than an improvement of the defensibility of a low-lying or weaker site placement. There is therefore a suggestion that there may be hierarchies among similarly-sized enclosures – a multivallate high altitude enclosure may be both more defensible and visually impressive than a lowland univallate example, and therefore more desirable both as a status symbol and for practical defence.

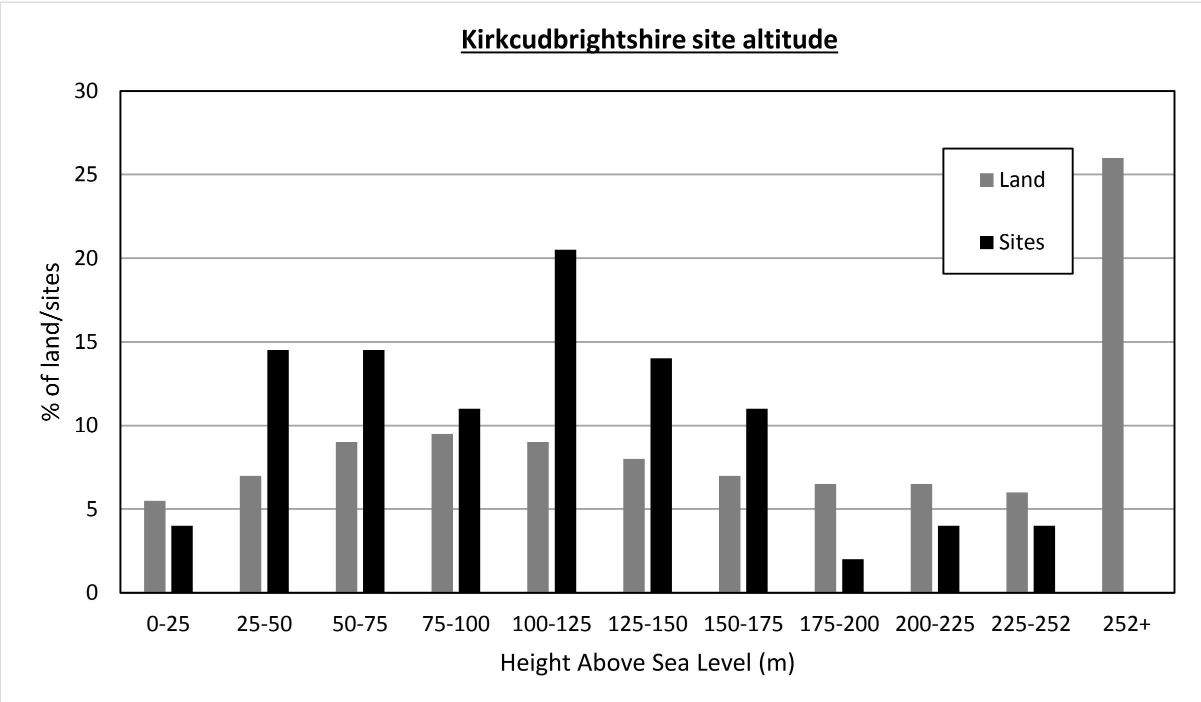

Figure 9.19: *Height of sites above sea level (m). This is compared to the percentage of land falling into each height category. Several altitude spans are disproportionately popular for later prehistoric settlement.*

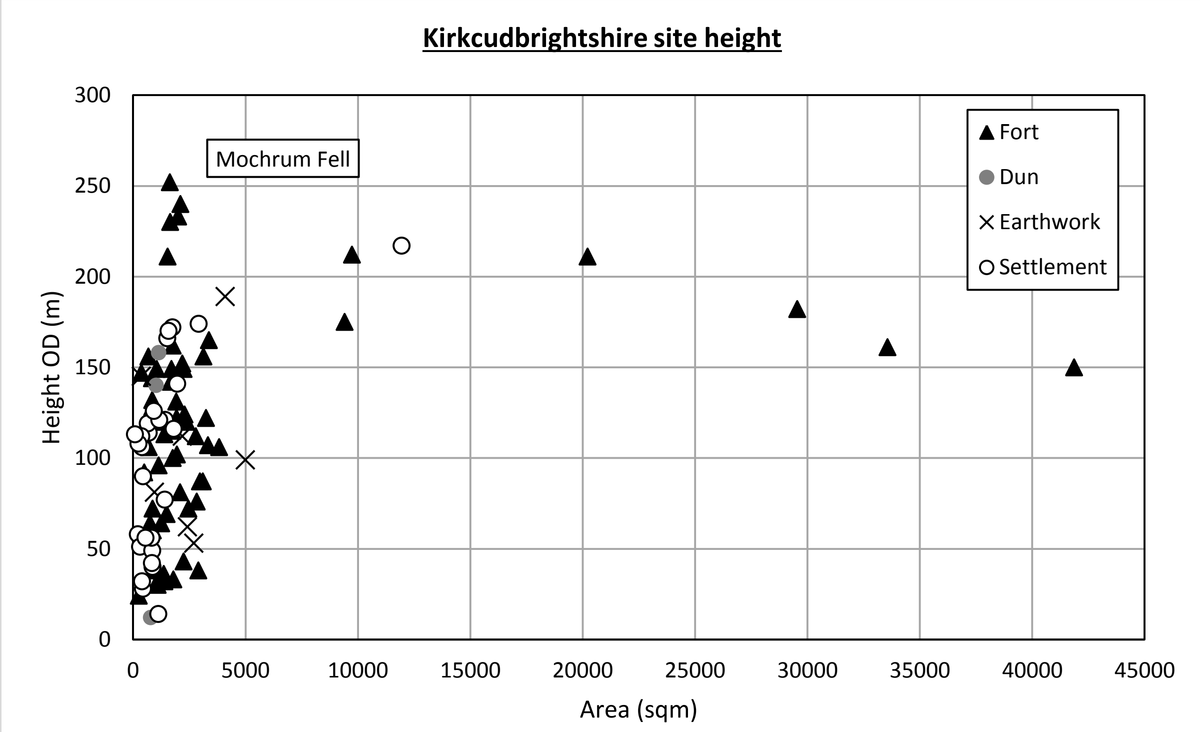

Figure 9.20: *Site area compared to height above sea level (all sites). Size T sites are comparatively high.*

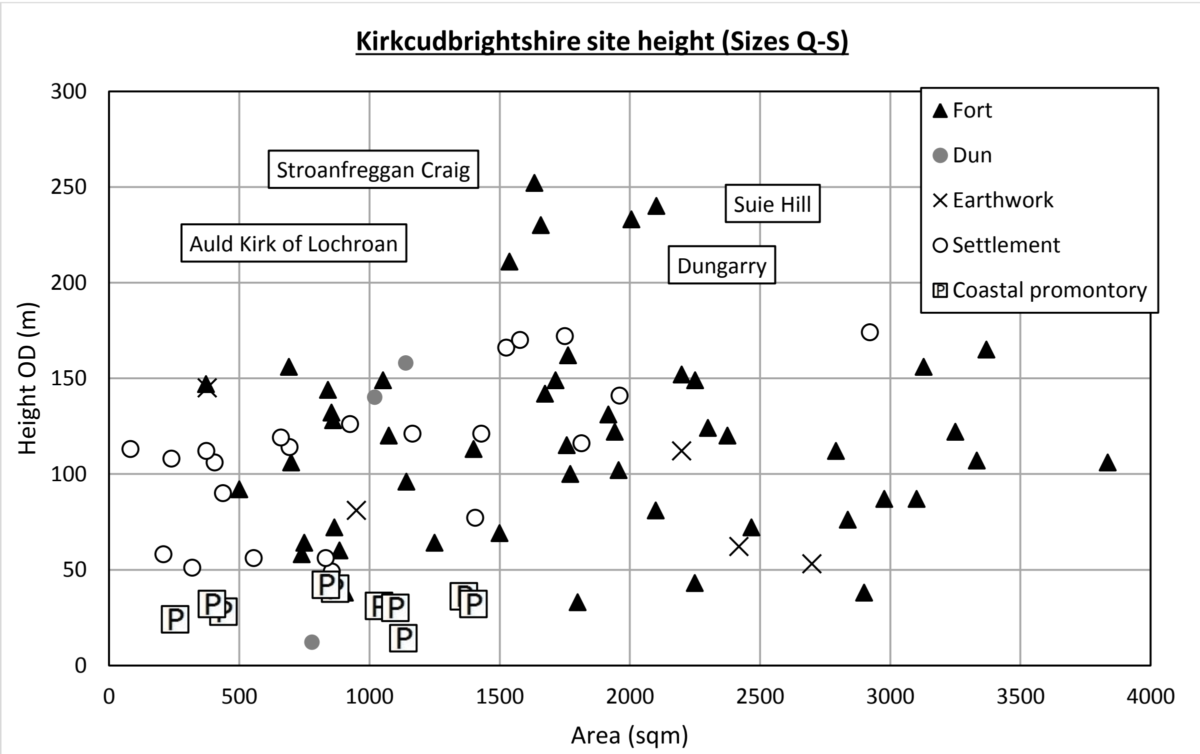

Figure 9.21: *Site area compared to height above sea level. A group of size S sites are at very high altitudes, and close together in terms of internal area.*

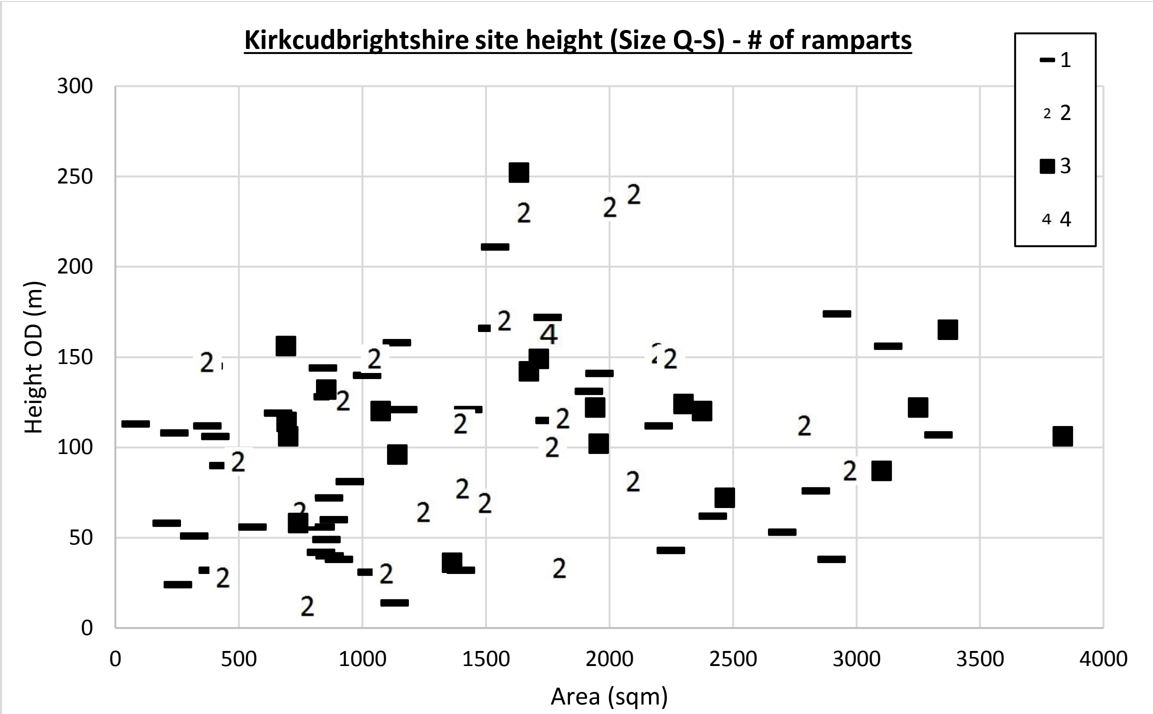

Figure 9.22: *Site area compared to height above sea level, categorised by number of ramparts. While there is considerable overlap, sites with 3 or 4 defensive circuits tend to be higher in altitude.*

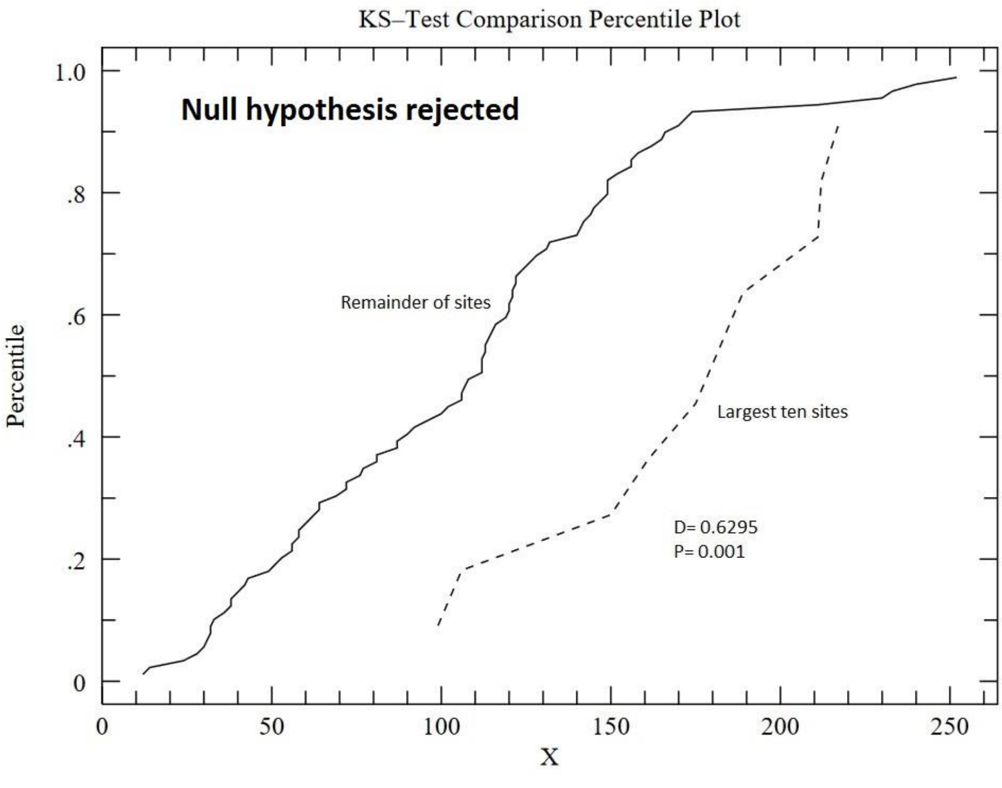

Figure 9.23*: K-S test comparing altitude of the largest ten sites with the remainder of sites. The largest ten sites are situated at higher altitudes.*

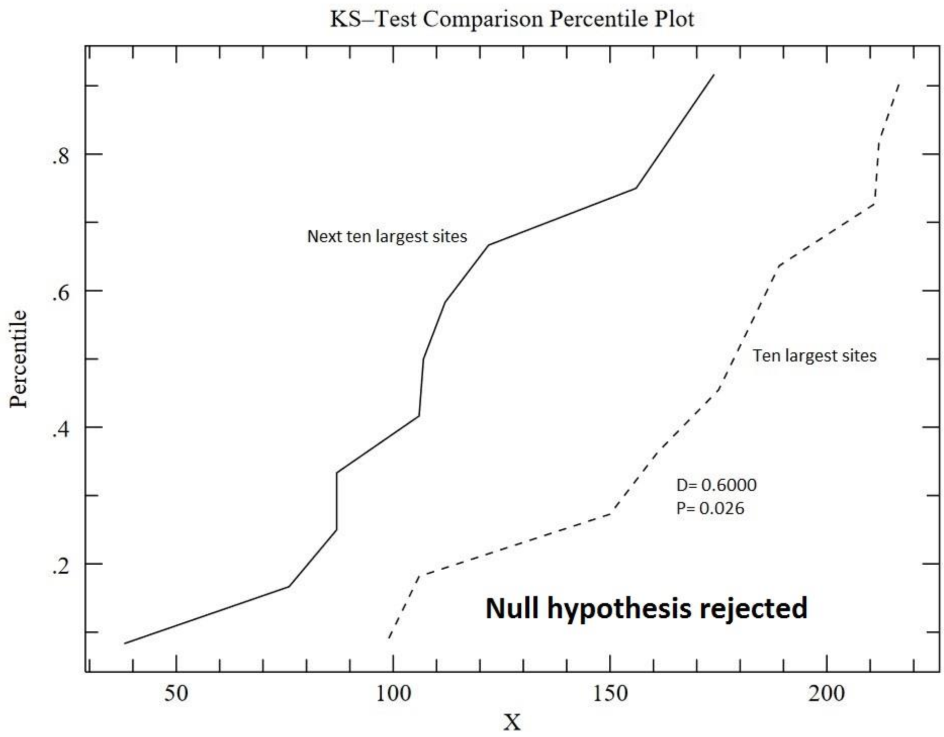

Figure 9.24*: K-S test comparing altitude of the ten largest sites with the next ten largest. The largest ten sites are located at higher altitudes, with the two datasets conclusively not part of the same distribution.*

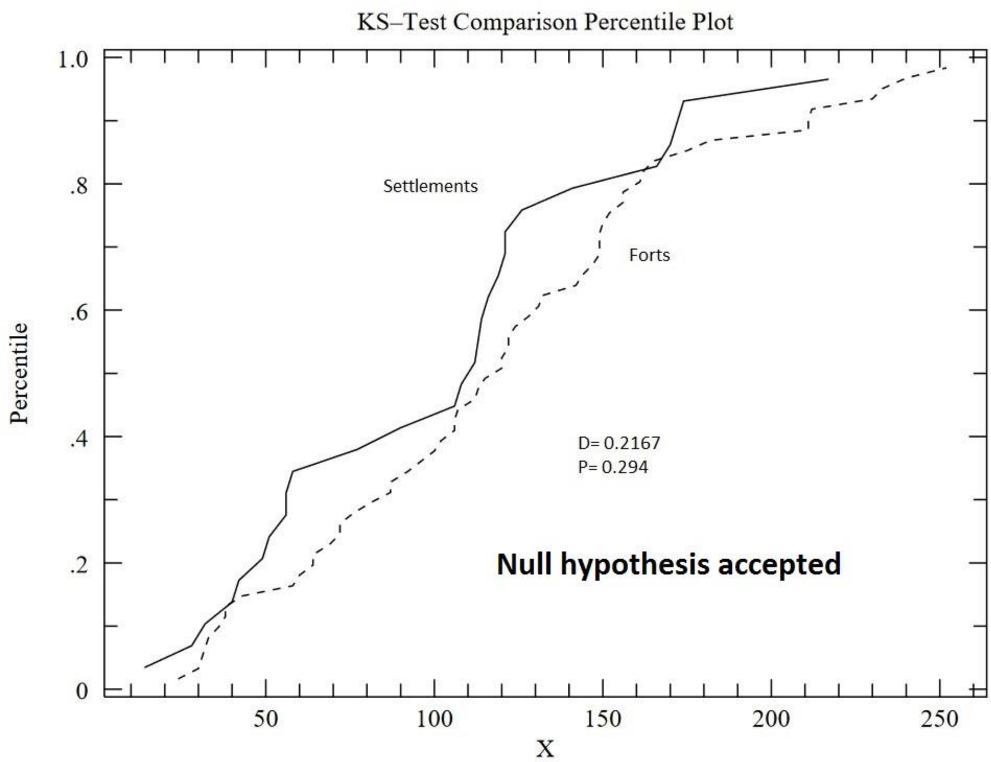

Figure 9.25*: K-S test comparing altitude of sites classed as settlements and forts.*

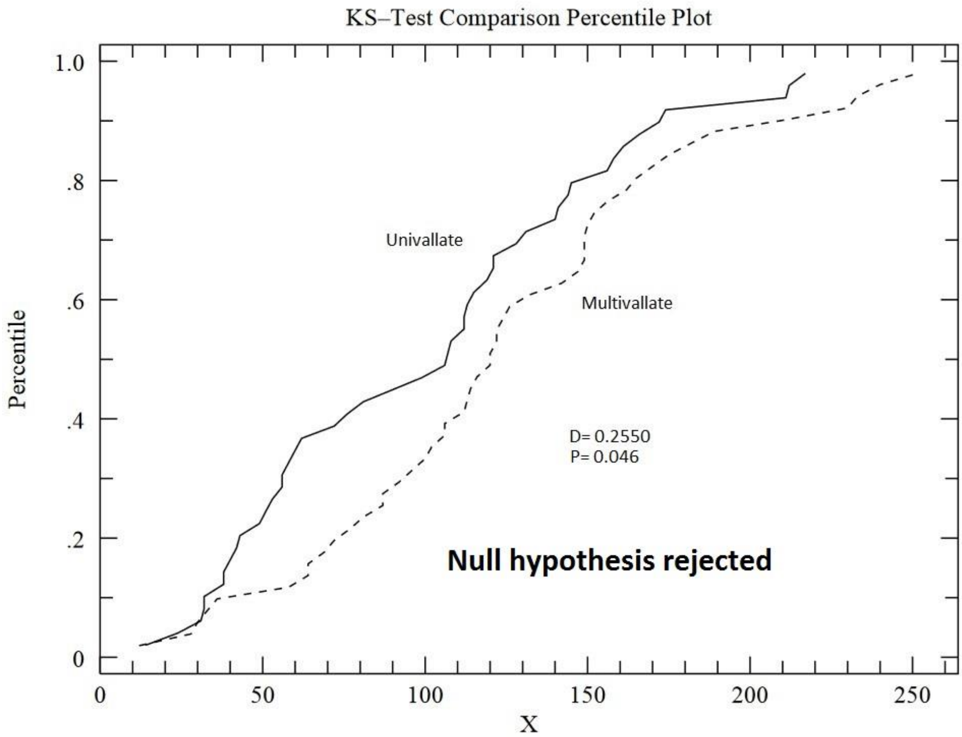

Figure 9.26*: K-S test comparing the altitude of univallate and multivallate sites. Multivallate sites are higher.*

9.2.2 Topographic Prominence

Most size T enclosures are situated at the highest point within 1 km radii, and among the highest locations within their 5 km radii (Figure 9.27 & 9.28). There is no higher ground within 1 km of the forts of Barr Hill, Beacon Hill, Moyle Hill, Dunguile Hill and Giant's Dyke (Figure 9.28). Beacon Hill is also situated at the highest point within its 5 km surroundings. This correlation between greater internal area and topographic prominence makes size T sites distinct from most size Q, R and S enclosed sites. There is also a relationship between sites with more than one line of defences and topographic prominence, as there was with altitude, with multivallate enclosures shown to have a higher percentage of land below them within a 1 km distance (Figure 9.31; Figure 9.34).

Furthermore, there is an association between size and prominence among all type Q, R and S sites. Enclosed sites in this size range that are larger than 1500 m^2 are significantly likely to have a higher percentage of land below them within 1 km than sites smaller than 1500 m^2 – i.e. the larger enclosures among the continuum of smaller enclosed sites in Kirkcudbrightshire are more prominent (Figure 9.35). There is little pattern visible among size Q and R sites (Figure 9.32 and 9.33) except that the three rectilinear examples are among the least prominent enclosures in Kirkcudbrightshire. This is perhaps a reflection of a similar pattern visible in Kintyre (Figure 7.30), with small non-curvilinear enclosures there significantly less topographically prominent than circular and oval sites.

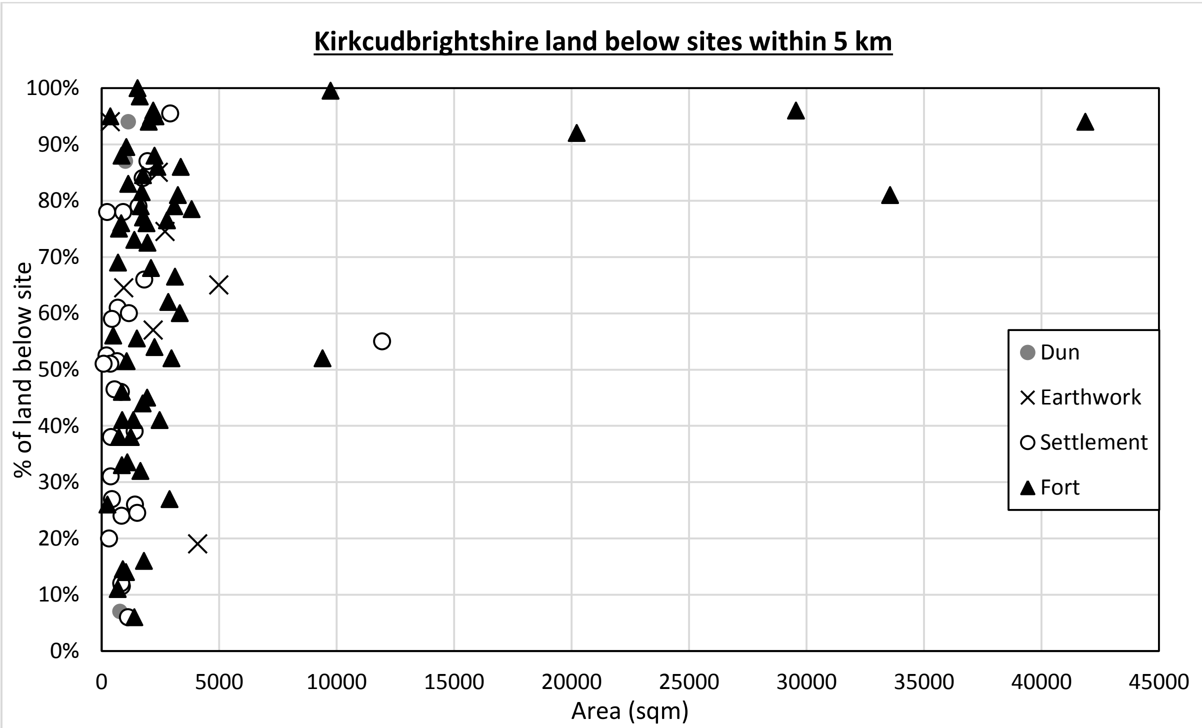

Figure 9.27: *Percentage of land below sites within a 5 km radius. Showing the prominence of most size T enclosures.*

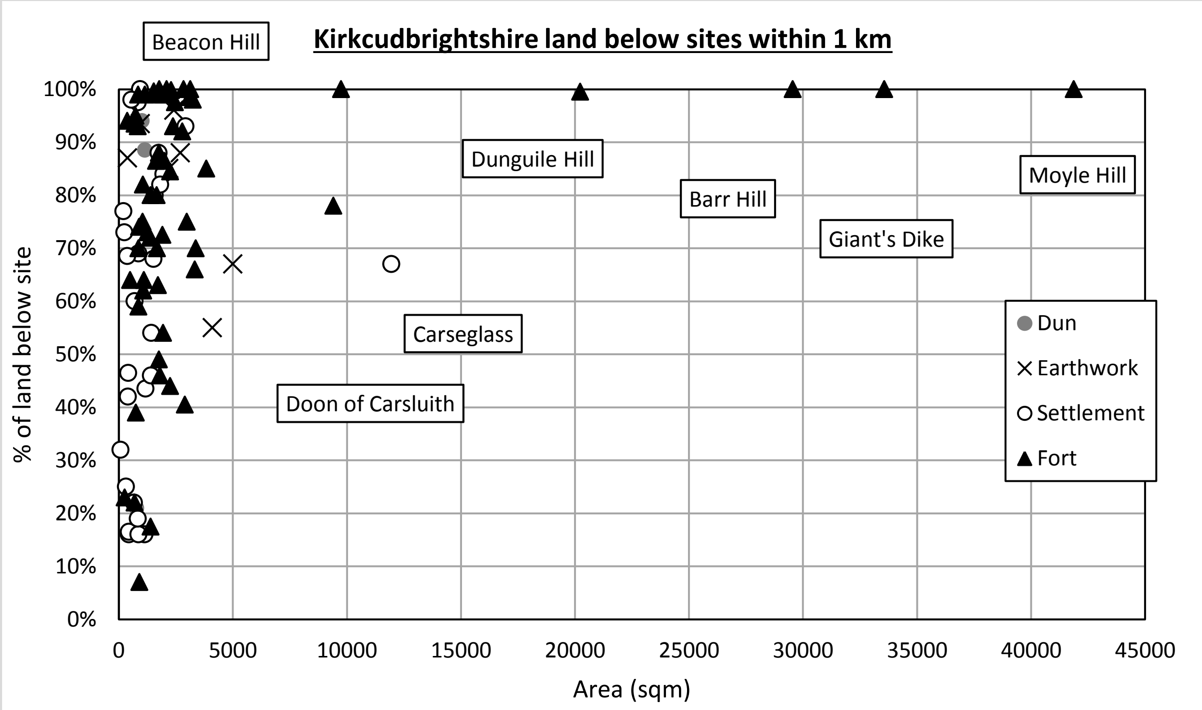

Figure 9.28: *Site area compared to percentage of land below sites within a 1 km radius. Showing the prominence of size T enclosures.*

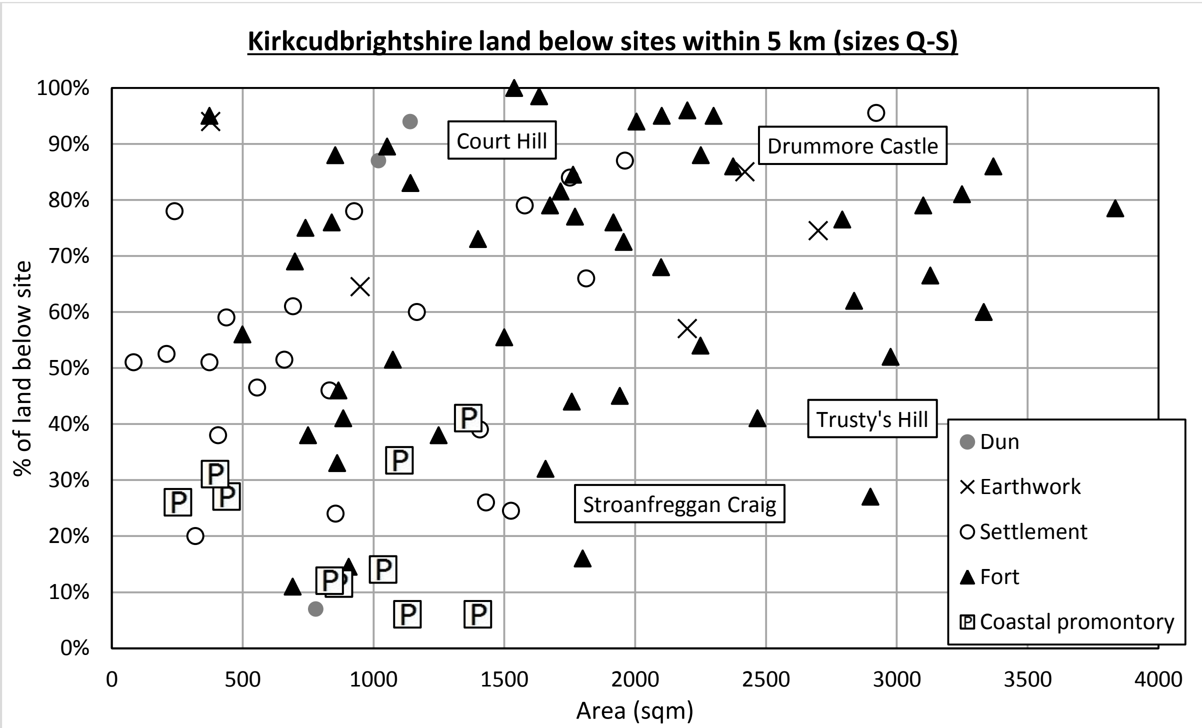

Figure 9.29: *Percentage of land below sites within a 5 km radius. Several size S sites between 1500 m^2 and 2500 m^2 have high topographic prominence.*

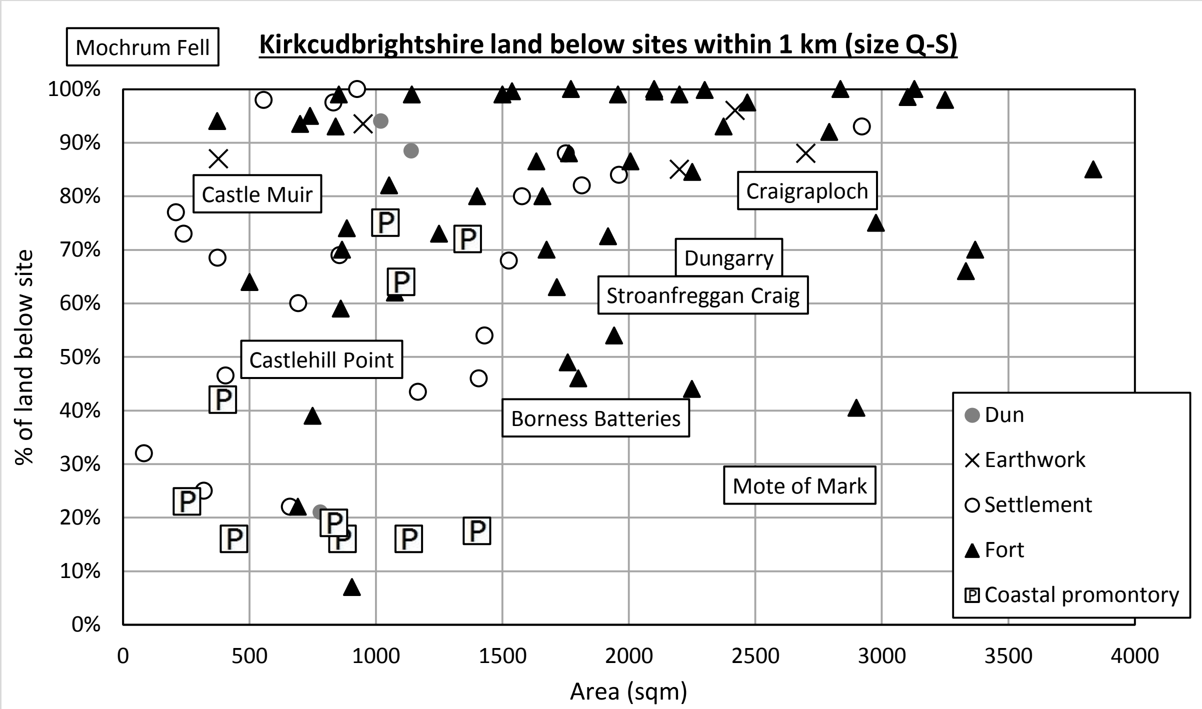

Figure 9.30*: Percentage of land below sites within a 1 km radius. Few patterns related to internal area or RCAHMS classification are apparent.*

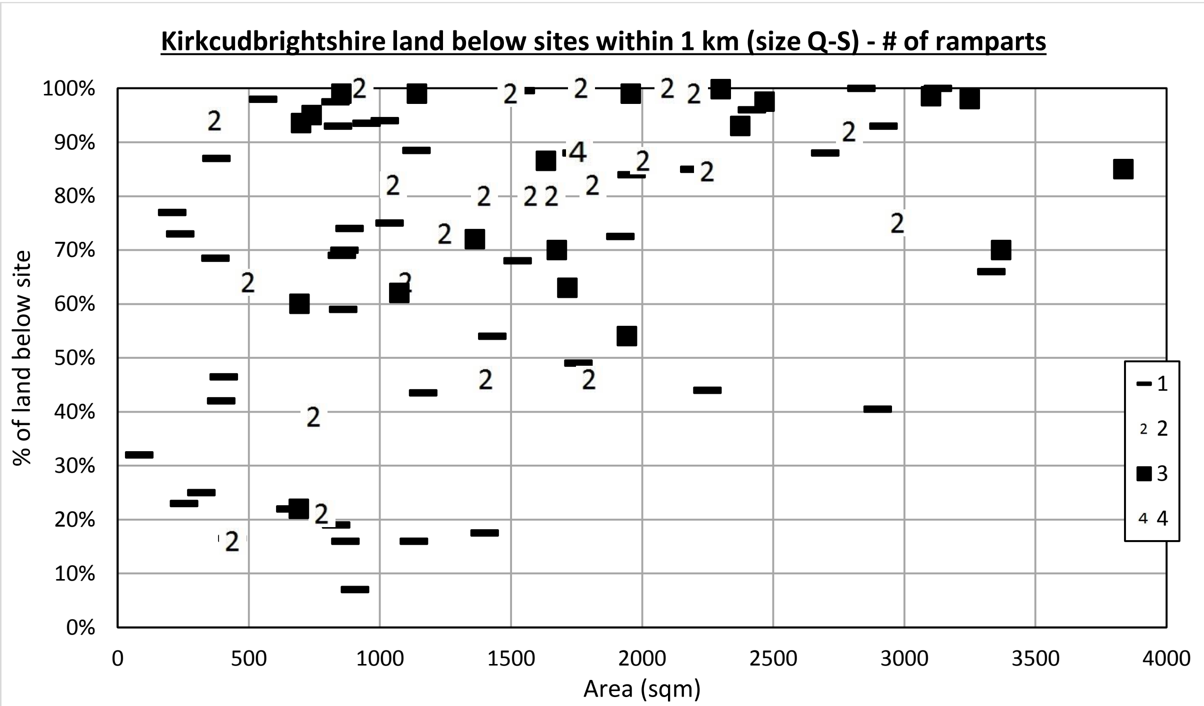

Figure 9.31*: Percentage of land below sites within a 1 km radius, categorised by number of ramparts. Multivallate sites have a higher proportion of land below them.*

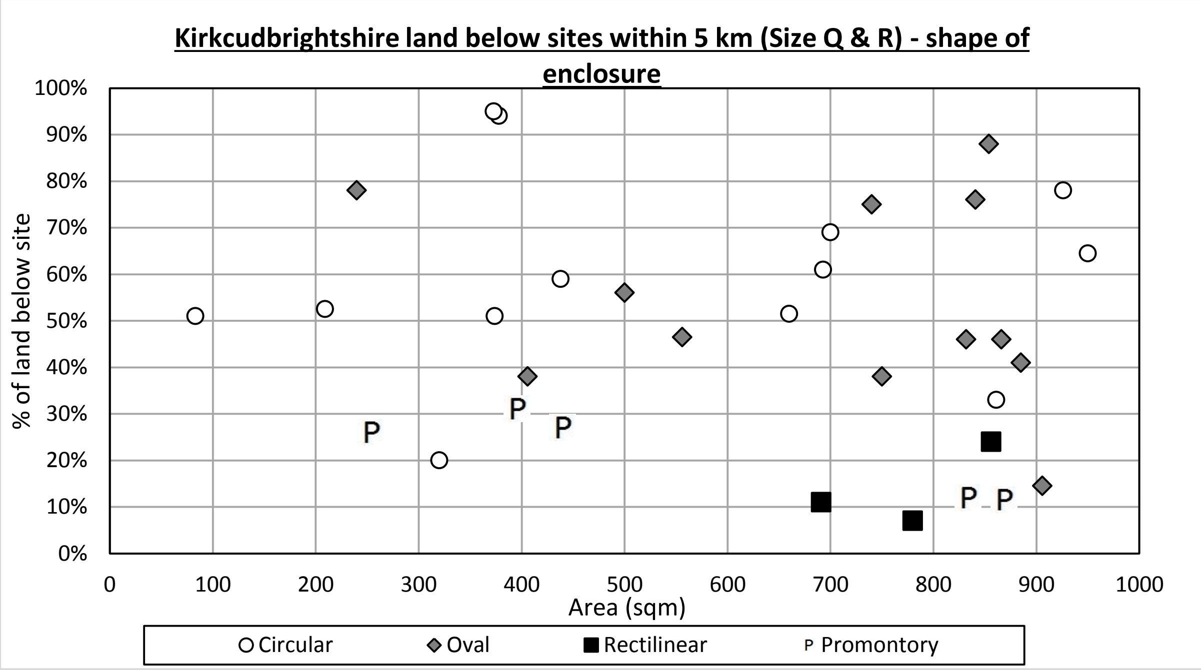

Figure 9.32: *Percentage of land below sites within a 5 km radius, categorised by enclosed shape. The three rectilinear sites are among the least topographically prominent within this distance.*

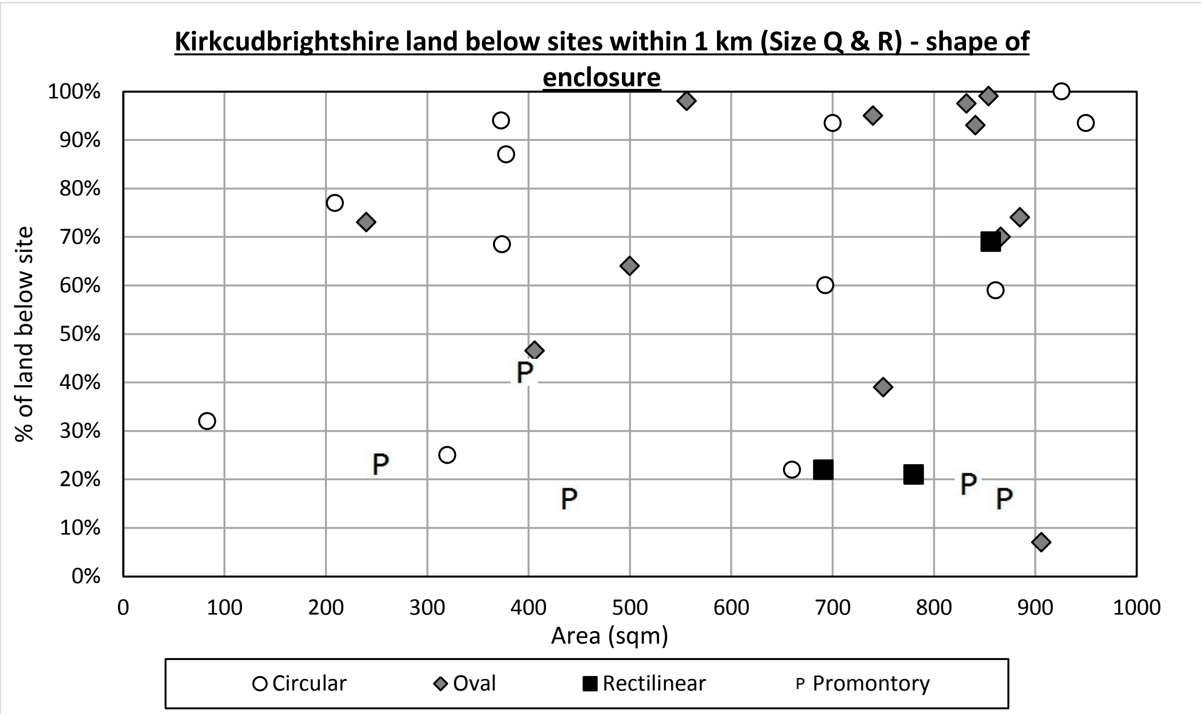

Figure 9.33: *Percentage of land below sites within 1 km radius, categorised by shape of enclosure. No pattern is discernible among the data.*

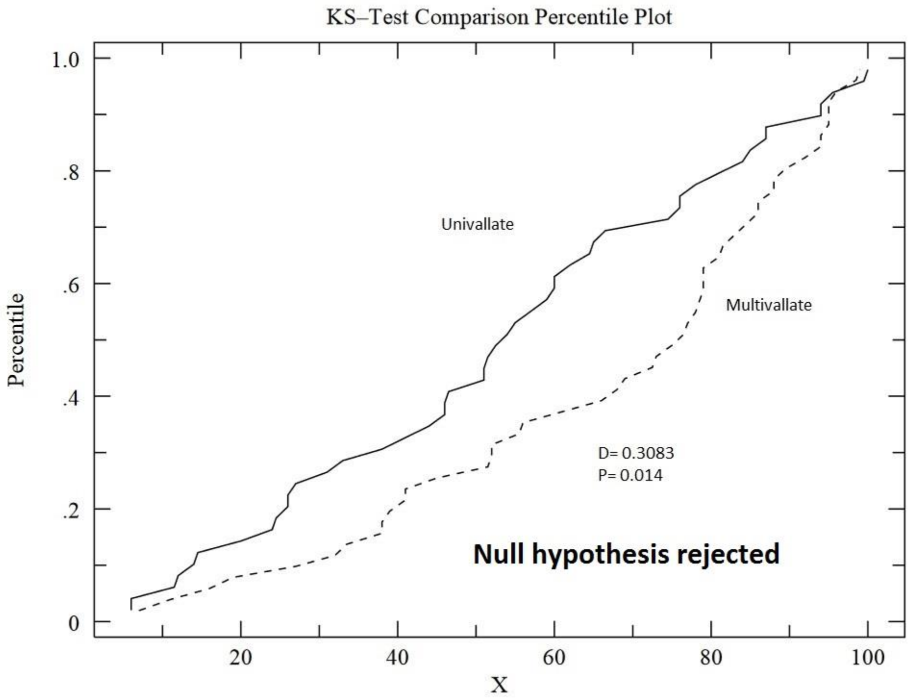

***Figure 9.34**: K-S test comparing percentage of land below univallate and multivallate sites within 1 km. There is a strong probability that multivallate sites have more land below them.*

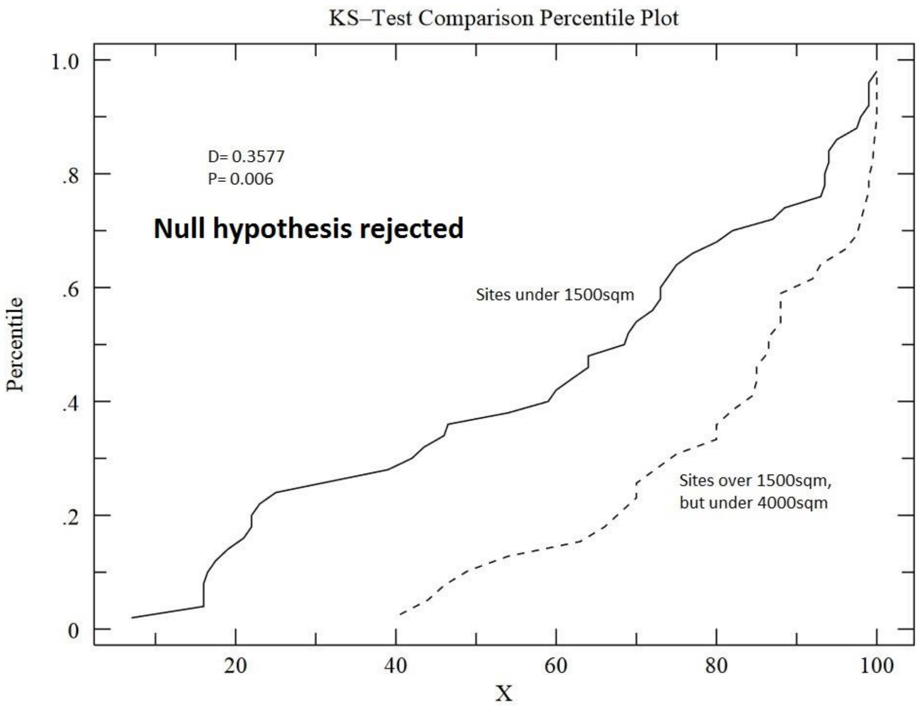

***Figure 9.35**: K-S test comparing percentage of land below sites 1500 m^2-4000 m^2 in area with sites smaller than 1500 m^2, over a 1 km radius. Among these sites, the group with the greater internal area is strongly likely to be more topographically prominent.*

The same group of upland drystone forts between 1500 m^2 and 2100 m^2 in internal area that formed a grouping in terms of their altitude is again distinct in its topographic prominence within a 5 km radius – with the exception of Stroanfreggan Craig. Given their similar size and prominence Drummore Castle and Court Hill may possibly be added to this grouping (Figure 9.29). Considering this, it is perhaps of some surprise that the 1 km topographic prominence statistics of some of these sites are not very high, with Dungarry, Mochrum Fell and Stroanfreggan Craig comparatively average in this regard (Figure 9.30). Furthermore, none of the sites in this grouping are actually at the very highest point in their 1 km surroundings. Their 5 km topographic prominence, relative to that of other sites, is greater than their 1 km prominence – i.e. they appear to be located on areas of high ground in the general landscape, but not always the highest hill amongst that high ground. This positioning can be seen in two maps showing land above and below Suie Hill (Figure 9.38) and Dungarry (Figure 9.39). Dungarry is in a sector of high ground, i.e. it is above most of the wider landscape, but not at the highest point among that high ground. Suie Hill is more prominent than Dungarry, but a higher hill still lies less than 1 km to the north.

In contrast to some upland forts elsewhere in western Scotland, e.g. hilltop sites on Islay or Mid Argyll (Chapter 4.5.1 & 4.5.2) these sites appear to have been built to a particular, regular, oblong or sub-rectangular, shape (Figures 9.36 & 9.37). They do not necessarily use or follow sheer local topography in the way that, for instance, craggy inland promontory sites on Skye like Dun Taimh or Dun Gerashader do (Chapter 8). It is probable that their shape was not determined by local topography, but predetermined and imposed upon it. It is likely that their locations reflect the choice of a prominent position where the terrain was suitable to construct a structure of this oval, somewhat oblong or even sub-rectangular shape. Indeed they may be quite similar to the enclosure on Knock Scalbart in Kintyre in this regard – the defences at Knock Scalbart do not follow the steep slopes of the edge of the hill for defence all the way around, and instead form a regular, roughly sub-rectangular shape on the flat plateau of the summit (Chapter 7). Truckell (1963, 94-5) identified several of this group of sites in Kirkcudbrightshire as Dark Age in date, notably Stroanfreggan Craig, Dungarry and Suie Hill, and possibly nucleated (see Chapter 3.3), although subsequent survey reports by Ordnance Survey investigators have discredited these claims (see RCAHMS Canmore entries: www.canmore.org.uk). Most of these sites are multivallate, and some do have what appear to be associated lower enclosures (e.g. Figures 9.36 & 9.37), although whether these are indicative of a descending hierarchy of enclosures in uncertain.

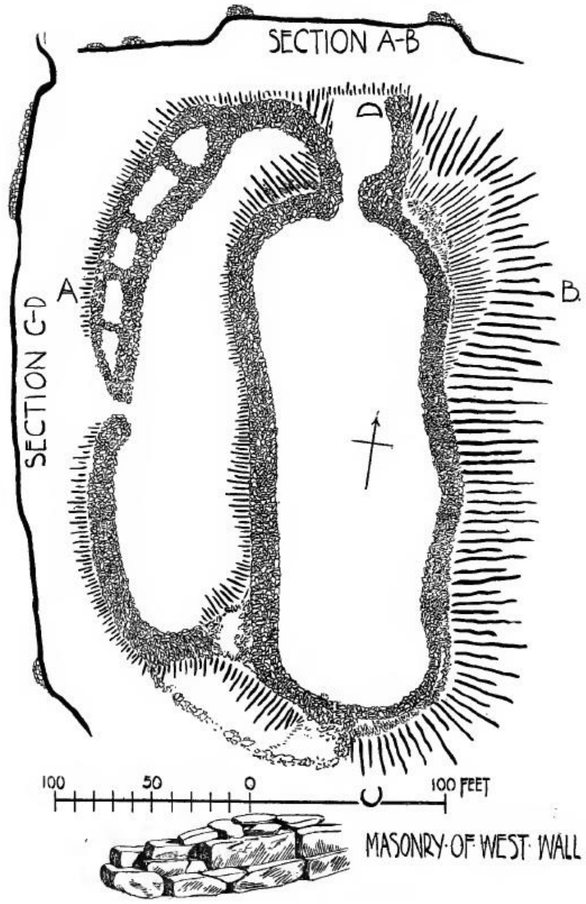

Figure 9.36: *Plan of Suie Hill, (RCAHMS 1914).*

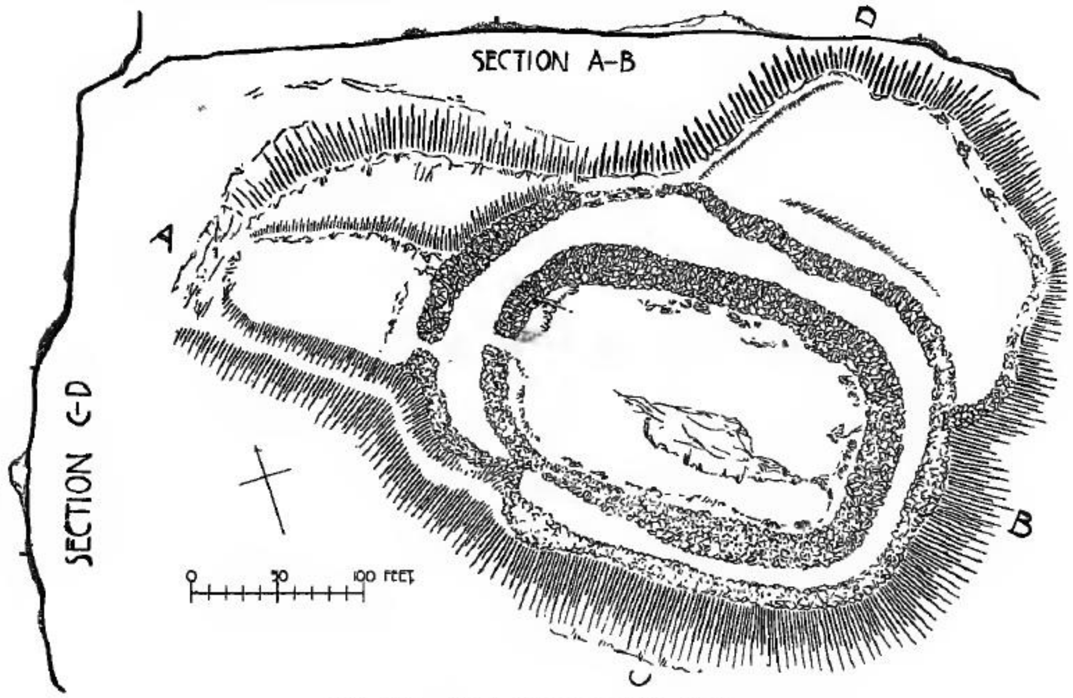

FIG. 165.—Fort, Dungarry (No. 406).

Figure 9.37: *Plan of Dungarry, (RCAHMS 1914).*

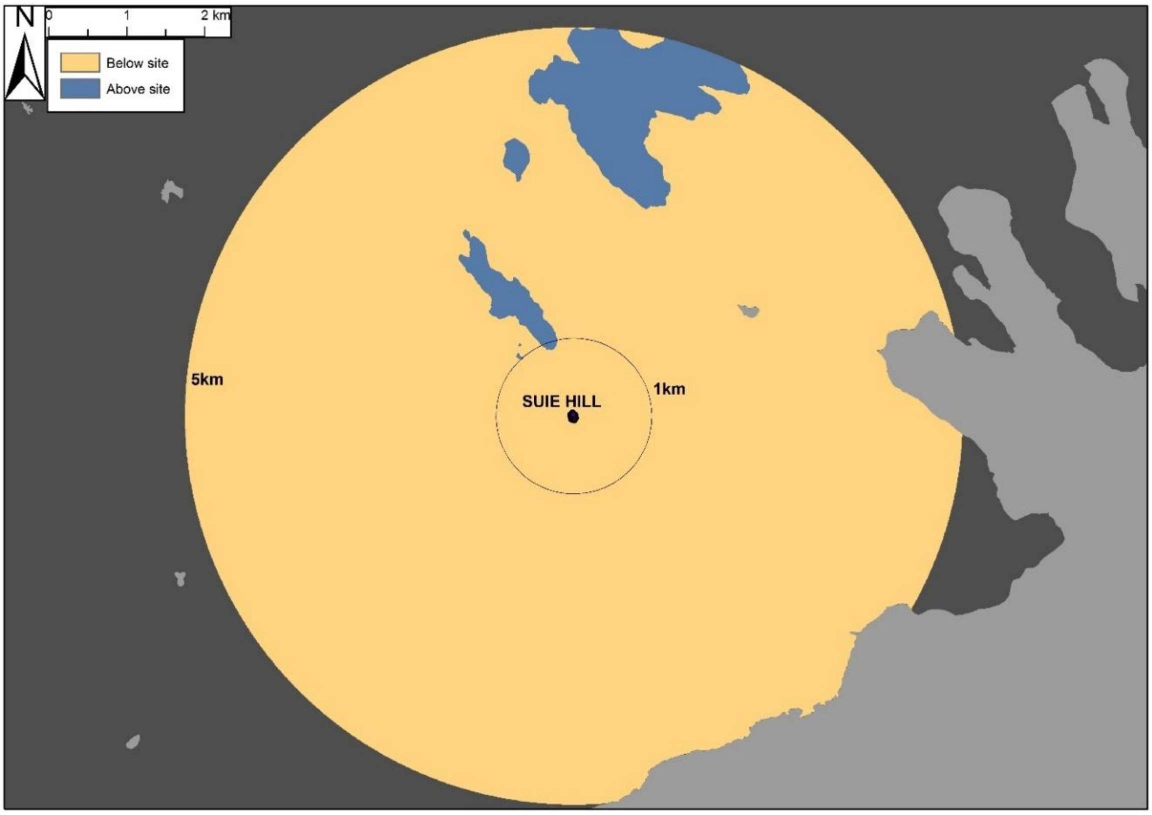

Figure 9.38: *Suie Hill – Land above and below within 5 km and 1 km.*

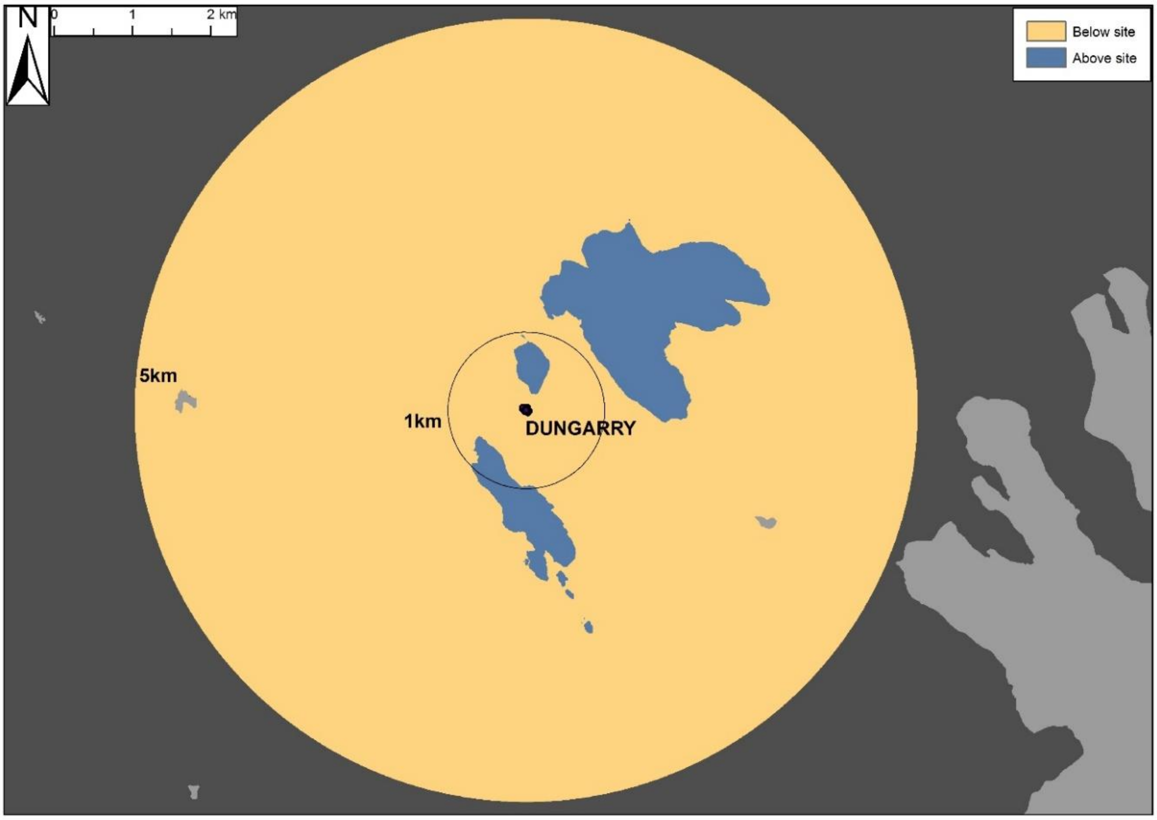

Figure 9.39: *Dungarry – Land above and below within 5 km and 1 km.*

Most size S sites do not form convincing groupings in terms of their prominence or altitude, and a majority are situated with between 50% and 80% of ground in their surrounding 5 km and 1 km radii below them. A majority of these are enclosures defended by earthworks and ditches, and most are classed as forts by the RCAHMS. Enclosed sites like Torkirra fort have very substantial earthworks, and many examples, like Glengappock Mote (Figure 9.40), Wraith Plantation (Figure 9.43) or The Doon, Twynholm are multivallate. The topographic prominence of many sites among this loose grouping is, however, much lower than the size S high altitude drystone forts or the size T enclosures identified above. Many among this group are prominent in specific directions, e.g. Torkirra fort is prominent from the north and west, but there are wide tracts of higher ground beginning less than 100 m to the south and east (Figure 9.42). Glengappock Mote is prominent in its landscape, but there is higher altitude land less than 600 m to the south east, and a large extent of higher ground within its 5 km radius (Figure 9.41). Over half of the land within 5 km of the fort of Wraith Plantation is above it (Figure 9.44), a significant contrast to sites like Suie Hill (Figure 9.38) or the size T enclosures (Figure 9.27 & 9.28).

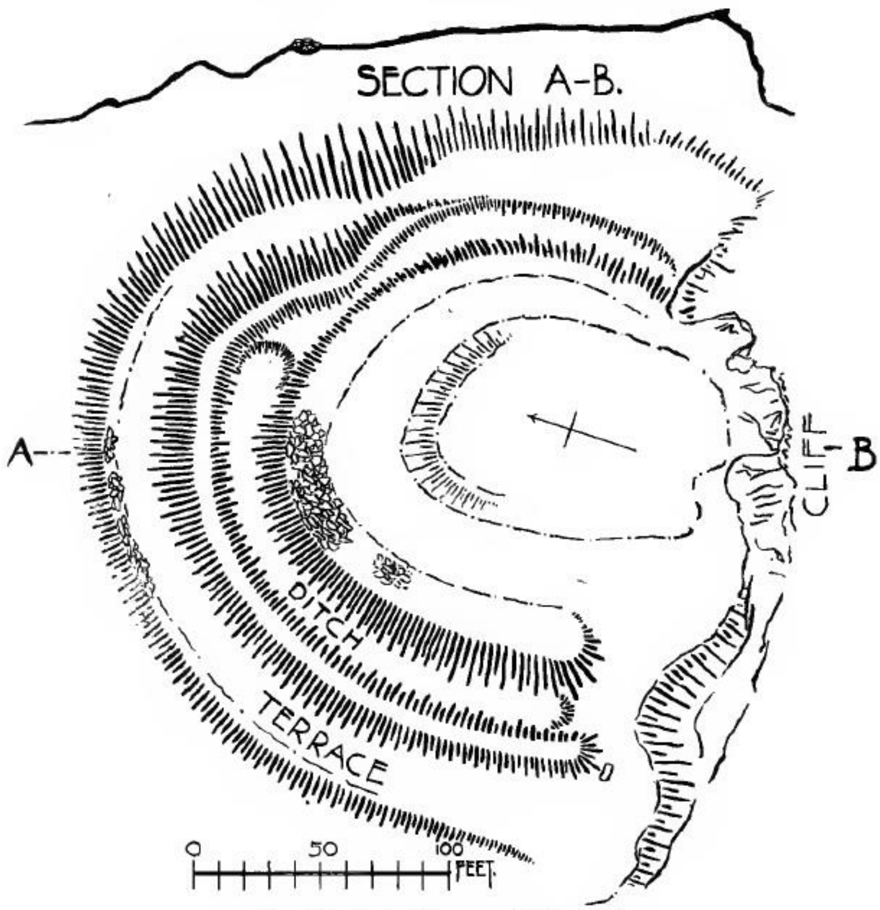

FIG. 63.—Fort, Glengappock (No. 134).

Figure 9.40: *Plan of Glengappock Mote, (RCAHMS 1914).*

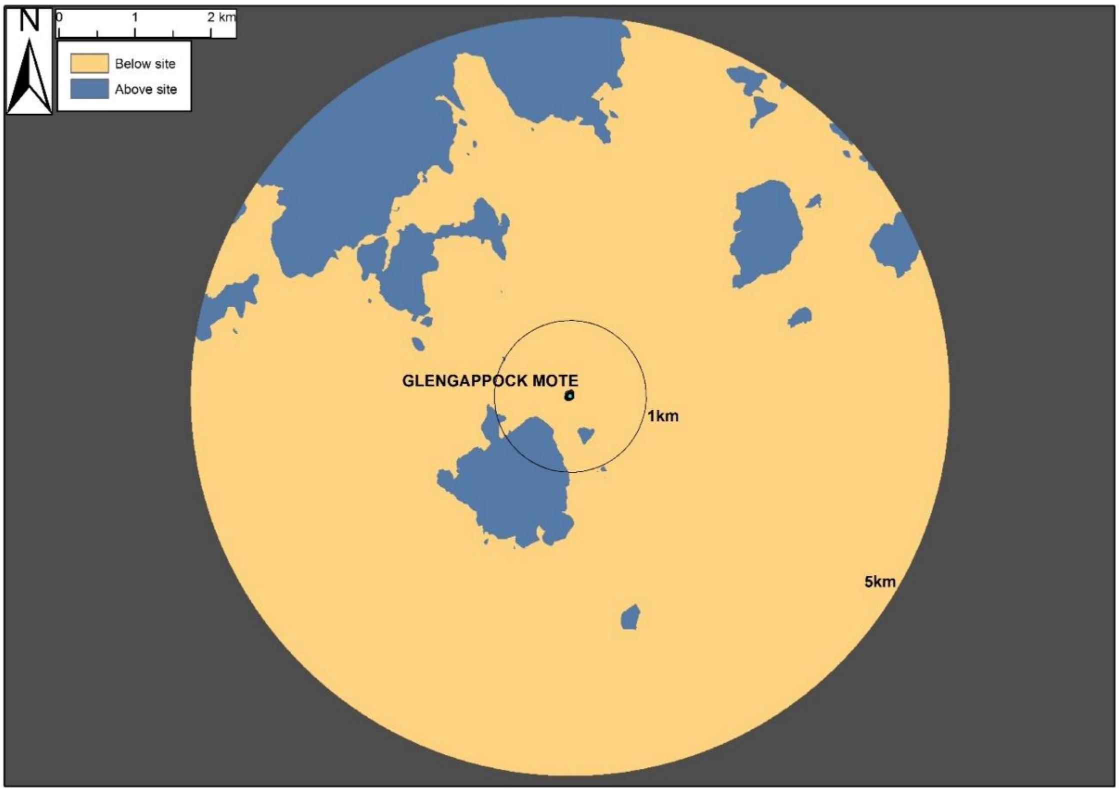

Figure: 9.41: *Glengappock Mote – Land above and below within 5 km and 1 km.*

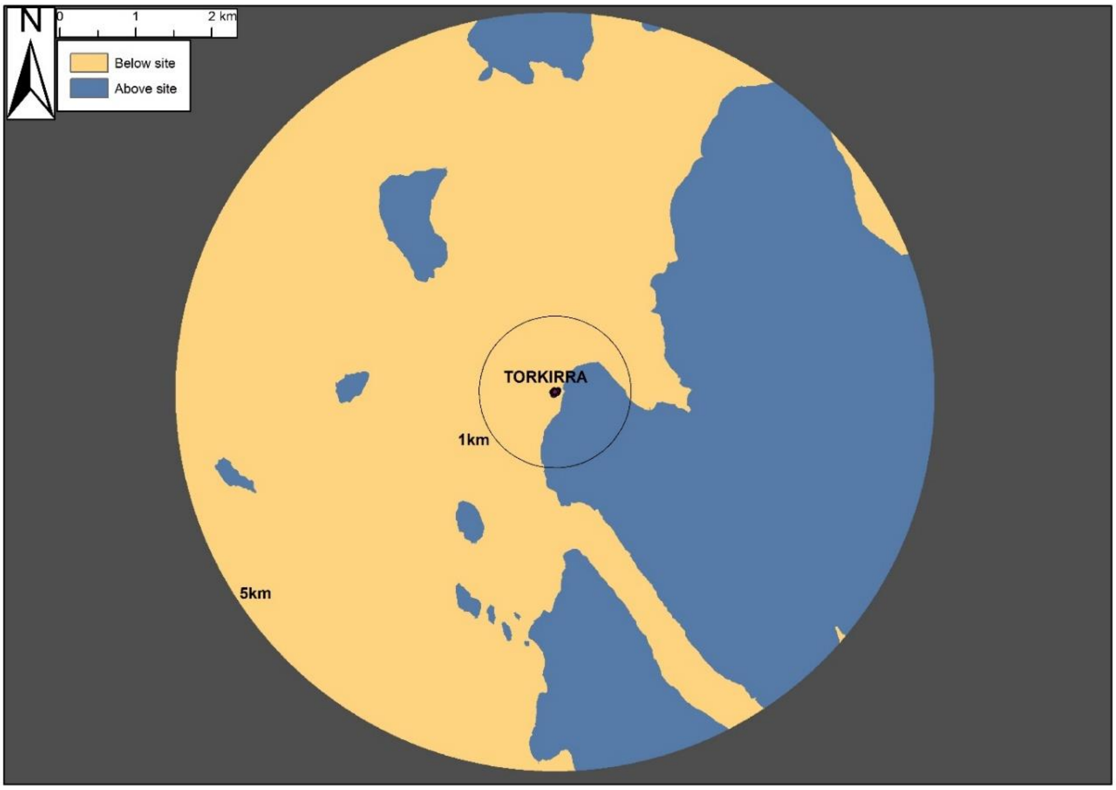

Figure 9.42: *Torkirra fort – Land above and below within 5 km and 1 km.*

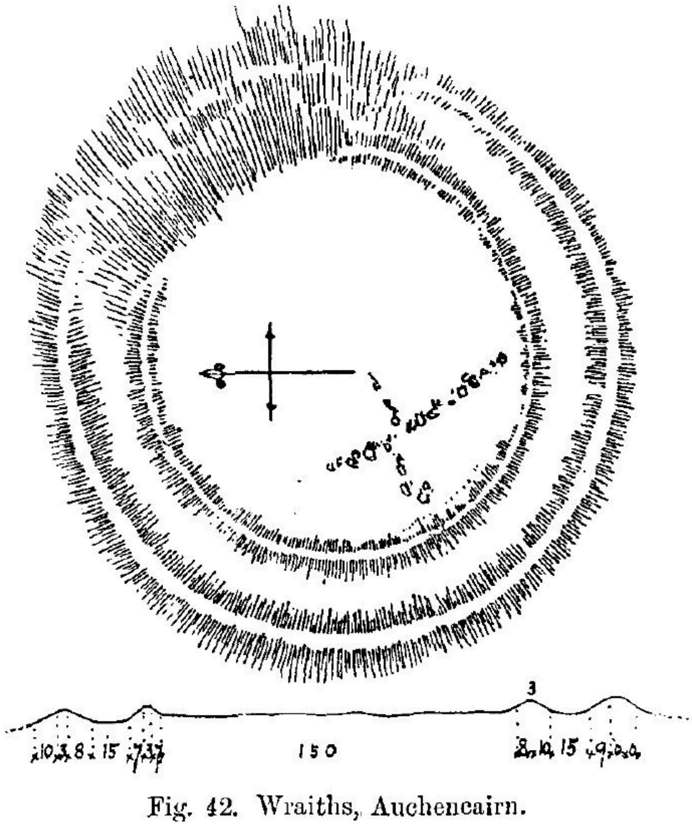

Figure 9.43: *Plan of Wraith Plantation, (Coles 1892).*

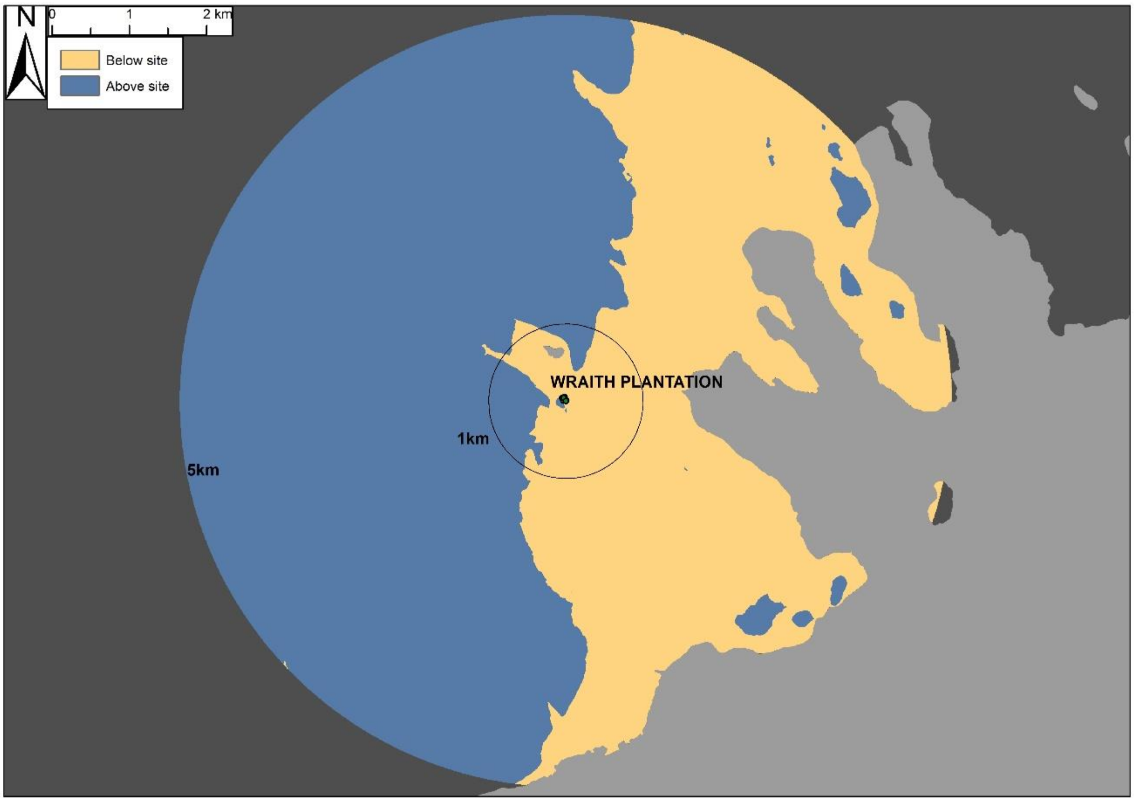

Figure 9.44: *Wraith Plantation – Land above and below within 5 km and 1 km.*

Size Q sites classed as settlements are situated with around 50% of ground within 5 km below them and form a discernible grouping (Figure 9.29). None are positioned at or nearly at the highest point in their 1 km radii (Figure 9.30). This group includes small sites of possible roofable size classed by Cowley as ‘small stone-walled enclosures’ and Cavers as ‘homesteads’. It comprises enclosures like those at Seaside, Bargrug and North Milton (Figure 9.45) – mostly regular circular structures, and also the circular palisaded and stone-walled enclosure of McNaughton’s Fort. Many other small, less prominent sites may fit within this grouping, including the smaller promontory enclosures, specifically McCulloch’s Castle, Airds and Muncraig Heugh. Notably, several of the larger promontory sites – Borness Batteries, Castlehill Point and Castle Muir – are all quite prominent within their 1 km radii (Figure 9.29). This correlation of relatively large size and higher topographic prominence, compared to other promontories, supports Toolis’ (2003; Chapter 9.1.2) contention that there may be evidence for differential hierarchies amongst the Galloway promontory enclosures.

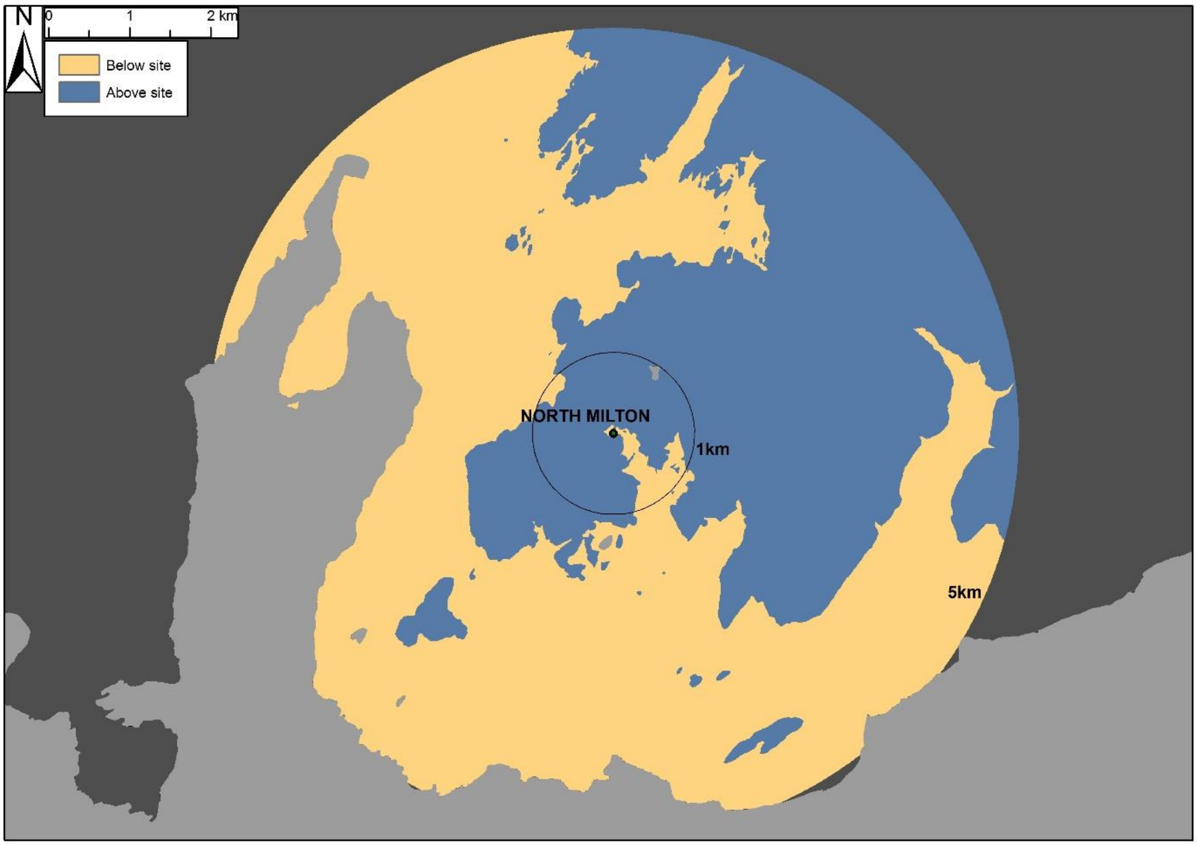

Figure 9.45: *North Milton settlement – Land above and below within 5 km and 1 km.*

Examination of topographic prominence over the shortest, 200 m, distance shows the greatest contrast between the relative prominence of multivallate and univallate sites, and sites classed as forts and settlements. Thirty-six out of 60 forts in the case study area have no higher ground within 200 m, compared with only 1 out of 28 settlements (Figure 9.46 & 9.47). This is a reflection of the nature of the classificatory system used by the RCAHMS in south west Scotland – the sites in observably more defensible positions were categorised as forts (See Chapter 3.4). When subjected to a K-S test, multivallate sites are likely to have more land below them within a 200 m distance than univallate examples (Figure 9.49). Thus, there seems to be a link between elaboration, or scale, of defences, topographic prominence in the landscape and not being overlooked by adjacent higher ground. The latter may suggest that multivallate sites were more likely to be positioned in more practically defensive positions. A modest correlation between size and prominence is also apparent, over 5 km, 1 km and especially 200 m radii, among size Q, R and S sites (Figure 9.29-9.31; 9.47). Similarly, almost all size T sites have no land above them within 200 m.

The two excavated high status forts of Trusty's Hill and the Mote of Mark are not outstandingly prominent. The Mote of Mark has a significant area of higher ground to the north and east, and, while there is no higher land within 200 m, there is more land above than below it within a 1 km distance (Figure 9.30, 9.52 & 9.53). Trusty's Hill (Figure 9.50 & 9.51) has a small area of higher ground within 200 m to the west and north, but it is relatively prominent over a 1 km radius being one of the higher points in the valley of the Water of Fleet. Conversely, its position is such that more than half of land within 5 km is above it (Figure 9.29), due to being situated within the river valley, as opposed to on higher ground surrounding it. Thus, enclosed sites that we know through excavation are probably regional centres are not necessarily outstandingly prominent from land.

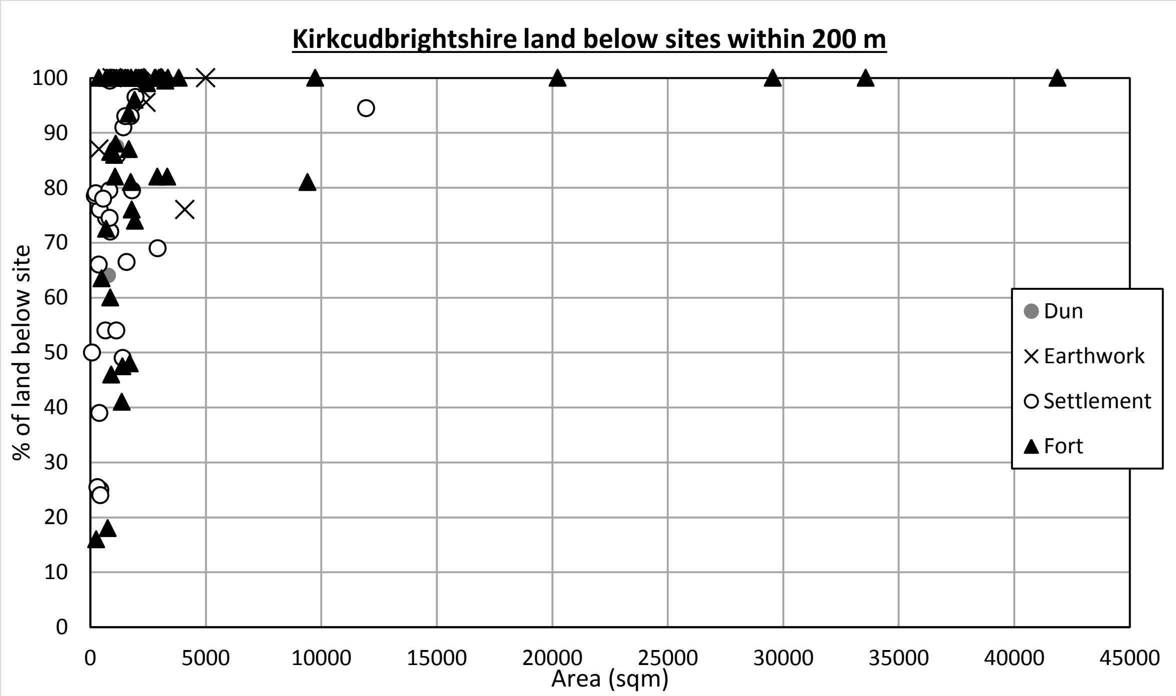

Figure 9.46*: The percentage of land below all sites within a 200 m radius. Showing that most size T sites are not immediately overlooked by higher ground.*

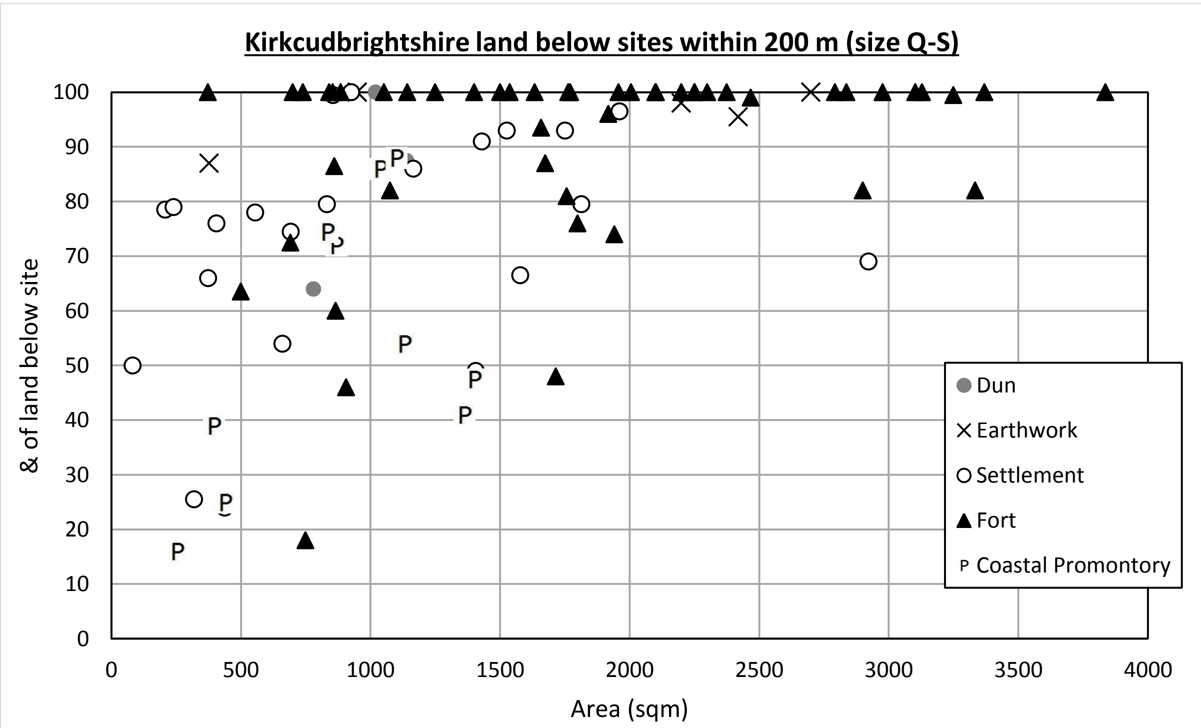

Figure 9.47*: Site area compared to percentage of land below sites within a 200 m radius. Showing that sites classed as forts tend to have no land above them within 200 m, which is not the case for settlements.*

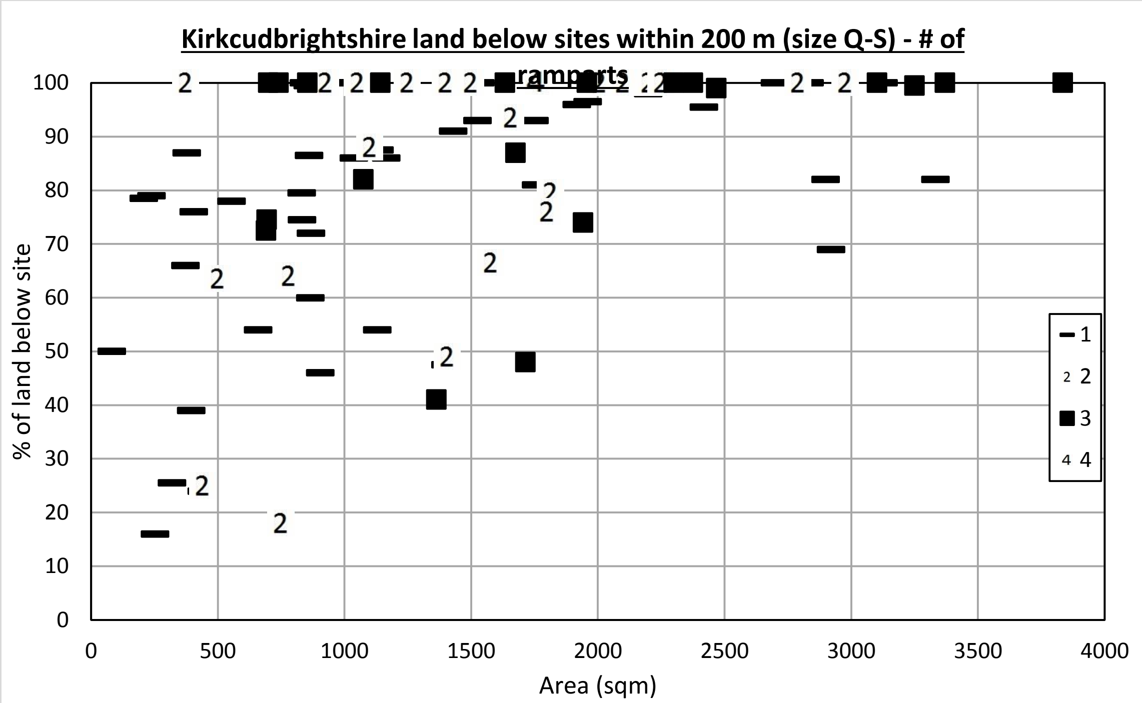

Figure 9.48: *The percentage of land below sites within a 200 m radius, categorised by number of ramparts. Multivallate sites are more likely to be situated at the highest point within 200 m.*

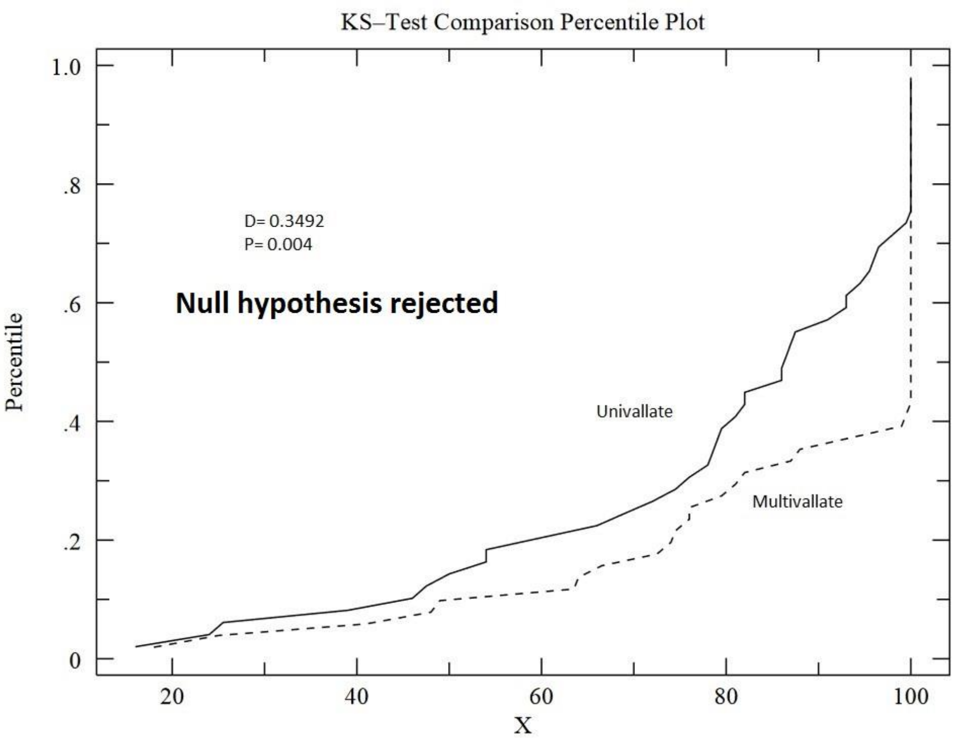

Figure 9.49: *K-S test comparing the percentage of land below multivallate and univallate sites, within a 200 m radius. Multivallate sites are more prominent as a group within this distance.*

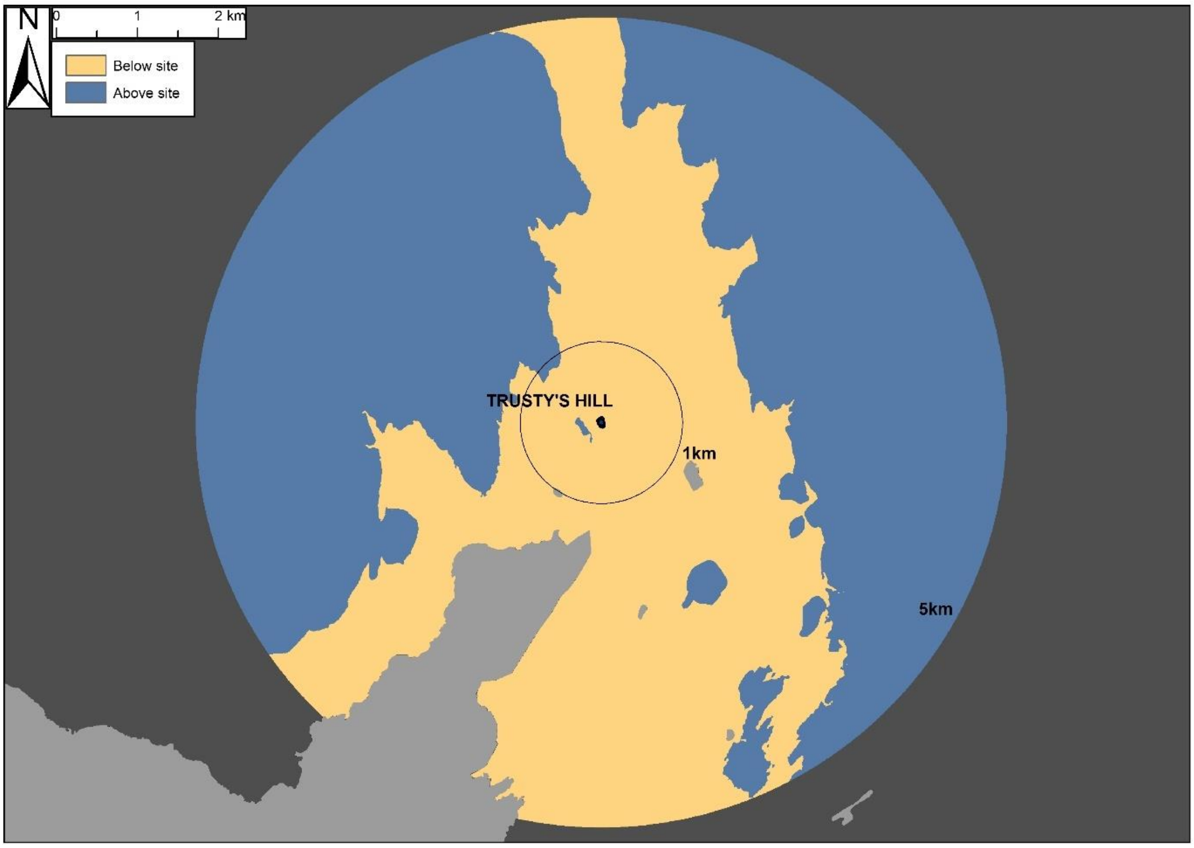

Figure 9.50: *Trusty's Hill – Land above and below within 5 km and 1 km.*

Figure 9.51: *Looking south west from the summit of Trusty's Hill at nearby higher ground.*

Figure 9.52: *Mote of Mark – Land above and below within 5 km and 1 km.*

Figure 9.53: *Looking west from summit of Mote of Mark towards higher ground of Grennan Hill.*

9.2.3 Site visibility in the landscape

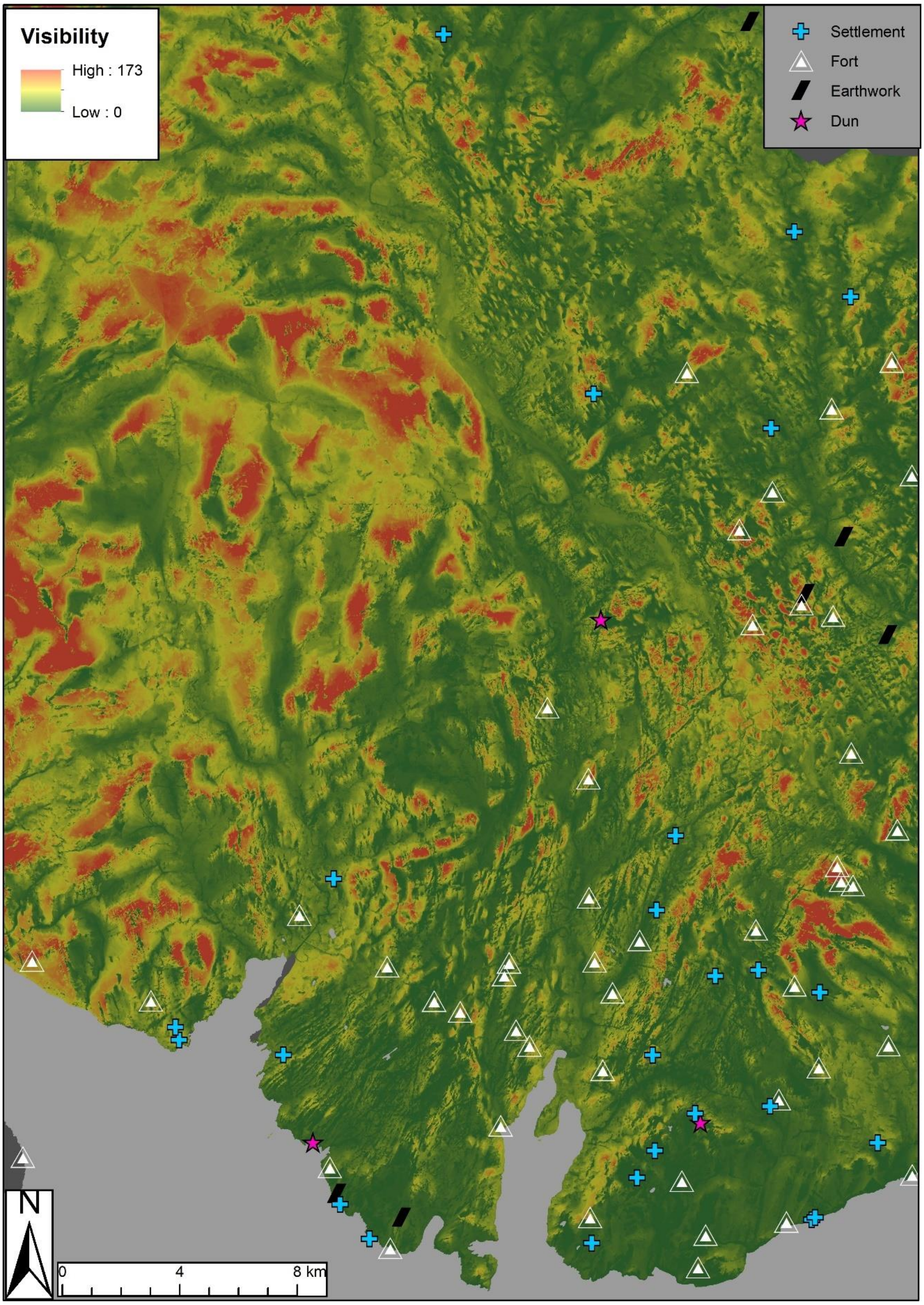

Figure 9.54: *Results of cumulative viewshed representing inherent visibility from land of western part of case study area.*

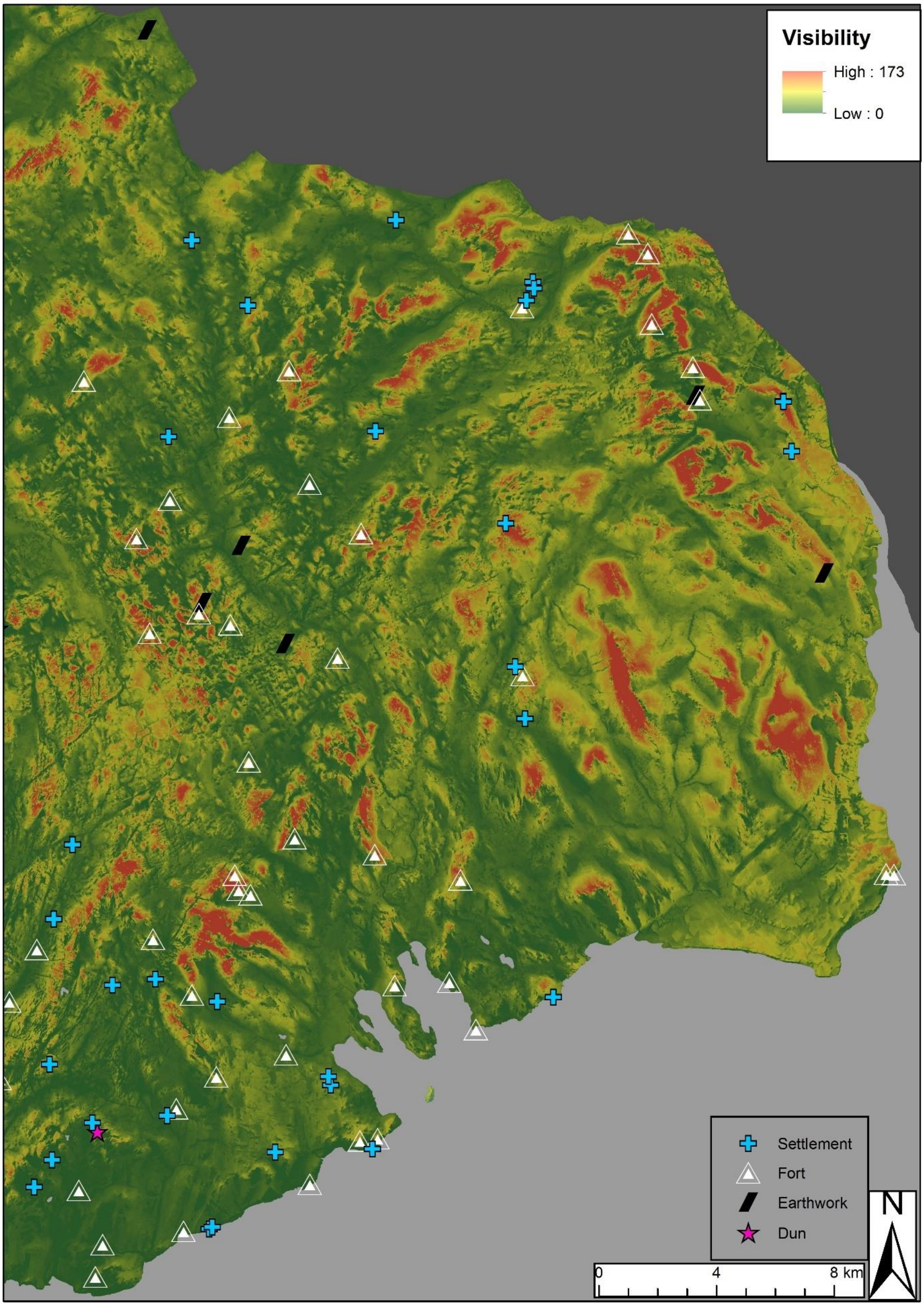

Figure 9.55: *Results of cumulative viewshed representing visibility from land of eastern part of case study area.*

The visibility of Kirkcudbrightshire's landscape from land was measured in a similar way as for the other two case studies, but in this case 4000 randomly-generated points were used due to the much larger area of land involved in the analysis. Points were generated up to 10 km to the west, north and east to minimise the effect of the edge-effect problem (Chapter 6.3.3). The case study area graded by visibility can be seen in Figure 9.51 & 9.52.

A 5 m by 5 m pixel on land on which a prehistoric enclosed site has been placed in Kirkcudbrightshire can be seen by a mean 23 randomly-generated points, compared to 17 points for a pixel in the general landscape (Table 9.1). Comparison with land below 252 m OD, or the altitude of the highest site, may be more legitimate, in which case the ground on which sites were placed is even more visible than that portion of the landscape. The areas enclosed by sites classed as settlements are much less visible than the landscape as a whole, while the ground on which sites classed as forts were placed, particularly size T sites, is much more visible. The land occupied by size T sites can be seen by three times as many random points as that of size Q sites. Similarly the ground on which size S sites was placed is more visible than size R, indicating that there is some differentiation in visibility related to size among the continuum of smaller enclosed sites.

Type	**Most visible pixel**	**Mean visibility of site footprint**
Total case study area		17
Total case study area without land >252 m		15
All sites	41	23
Settlements	19	12
Duns	50	27
Earthworks	41	23
Forts	51	27
Size Q	22	14
Size R	30	18
Size S	45	25
Size T	99	44

Table 9.1: *The number of randomly-generated points that can see sites and the general landscape in Kirkcudbrightshire, using both the most visible pixel and the mean visibility of the interior and defences.*

This pattern continues if the most visible pixel enclosed is used in calculations – forts can be seen by over twice as many randomly-generated points than settlements, and size T sites are much more visible than size Q or size R.

Areas occupied by sites classed as forts and settlements can be demonstrated to comprise separate datasets in terms of their visibility from land (Figure 9.56), if the mean visibility of that ground is used. The ten largest enclosed sites (seven size T and three size S) were also compared against the next ten largest, to explore whether a demonstrable break in terms of landscape visibility occurs where there is an apparent step-change in site area. However, the mean visibility (from land) of a pixel on ground occupied by the ten largest sites in Kirkcudbrightshire cannot be shown to be greater than the next ten largest sites at a statistically significant level (Figure 9.57). Without the inclusion of the three size S sites with the ground of ten largest sites, included to make the dataset large enough to be statistically viable, the result of the test may have been different. It is possible, then, that a step-change in visibility of sites accompanies the similar jump in terms of area and site altitude between 0.5 ha and 0.9 ha, but this cannot be demonstrated statistically due to the size of the datasets.

Ground occupied by multivallate enclosed sites can be shown to be more visible in the landscape than that of univallate examples (Figure 9.58). If multivallation, or elaboration of a site's defences, was primarily for display then it makes sense that such sites might be in more visible locations. However, multivallation can be linked with area enclosed in Kirkcudbrightshire – 70% of multivallate sites included in this case study are size S or size T, compared to just 44% of univallate sites. Thus it is possible that it may not specifically be multivallation and landscape visibility that are linked, but instead area enclosed and landscape visibility. Several of the most visible sites in the case study are univallate – Beacon Hill and Auld Kirk of Lochroan (Figure 9.61 & 9.63). If size Q and R sites (a large proportion of which are univallate) are removed from the analysis in Figure 9.58, and the visibility of all univallate and multivallate sites of sizes S and T are compared with a K-S test there is a much lesser confidence level that the enclosures with more than one line of defences are more visible in the landscape (Figure 9.59).

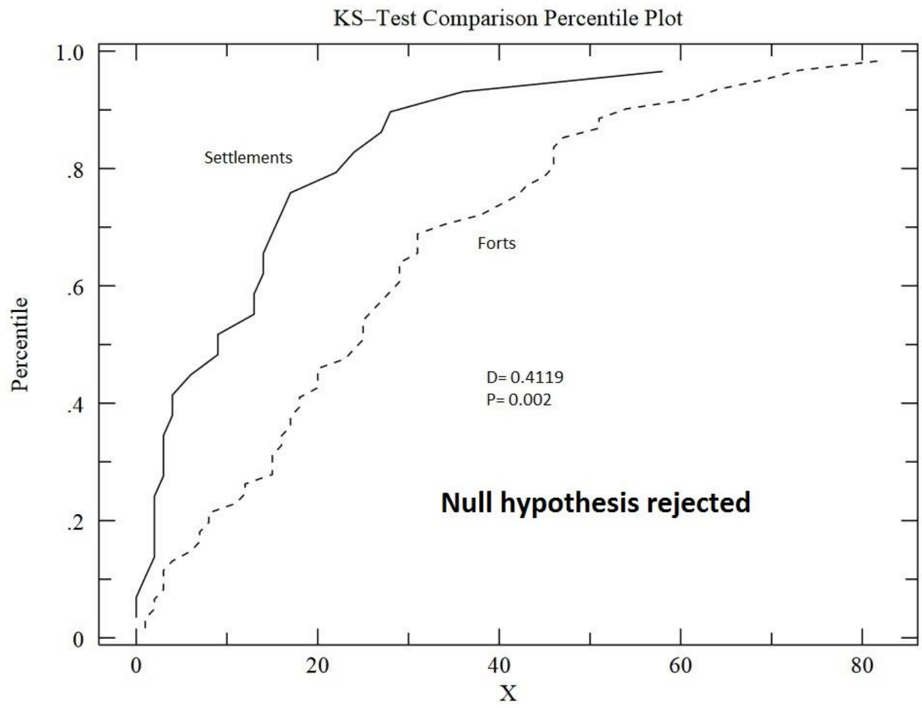

Figure 9.56*: K-S test comparing the visibility of the positions of duns and forts in the landscape (mean visibility). The land on which forts are placed is more visible.*

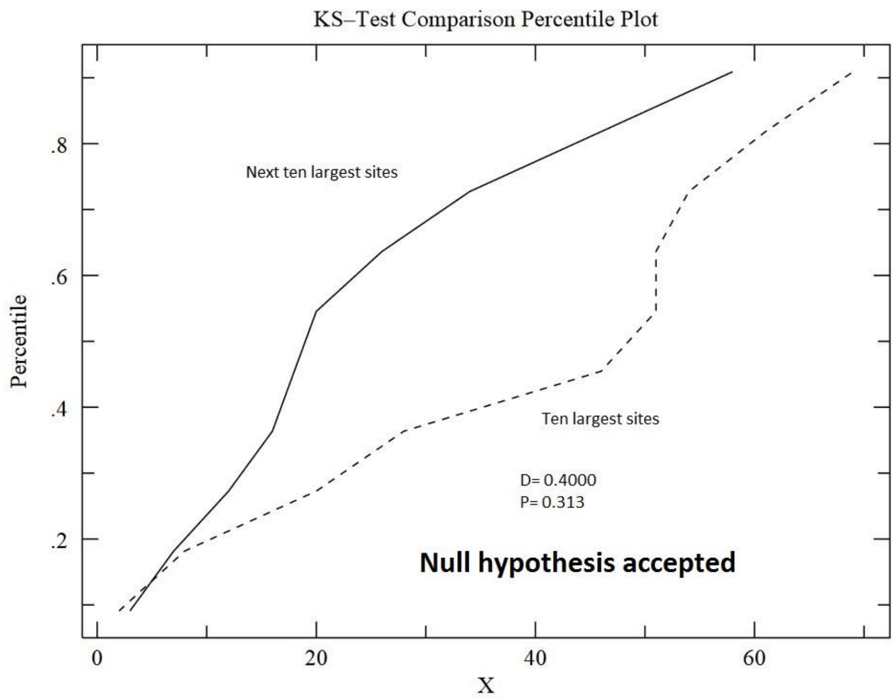

Figure 9.57*: K-S test comparing the inherent visibility of the landscape positions of the ten largest sites with the next ten largest sites in Kirkcudbrightshire (mean visibility).*

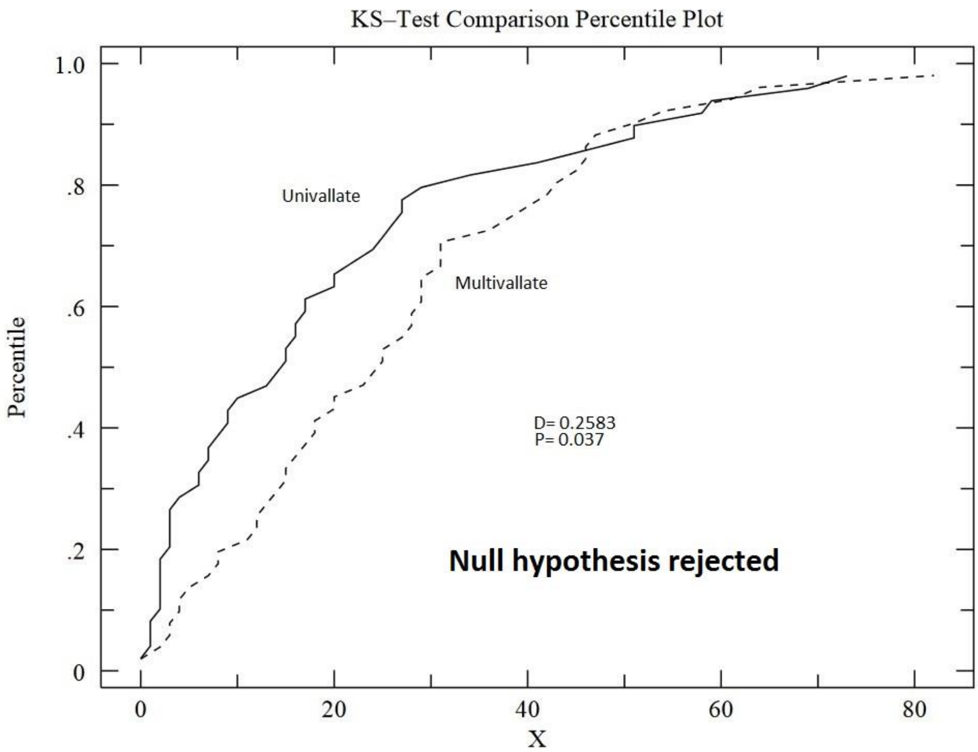

Figure 9.58: *K-S test comparing the inherent visibility of the landscape positions of univallate and multivallate sites (mean visibility). The ground on which multivallate sites is placed is more visible.*

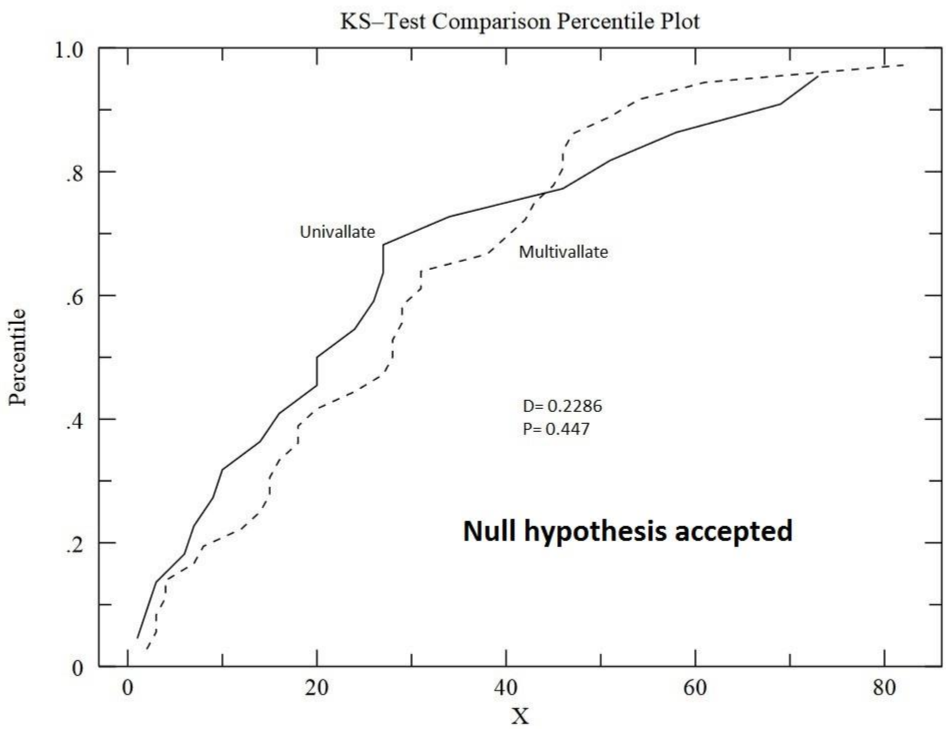

Figure 9.59: *K-S test comparing the inherent visibility of the landscape positions of univallate and multivallate sites of sizes S and T (mean visibility).*

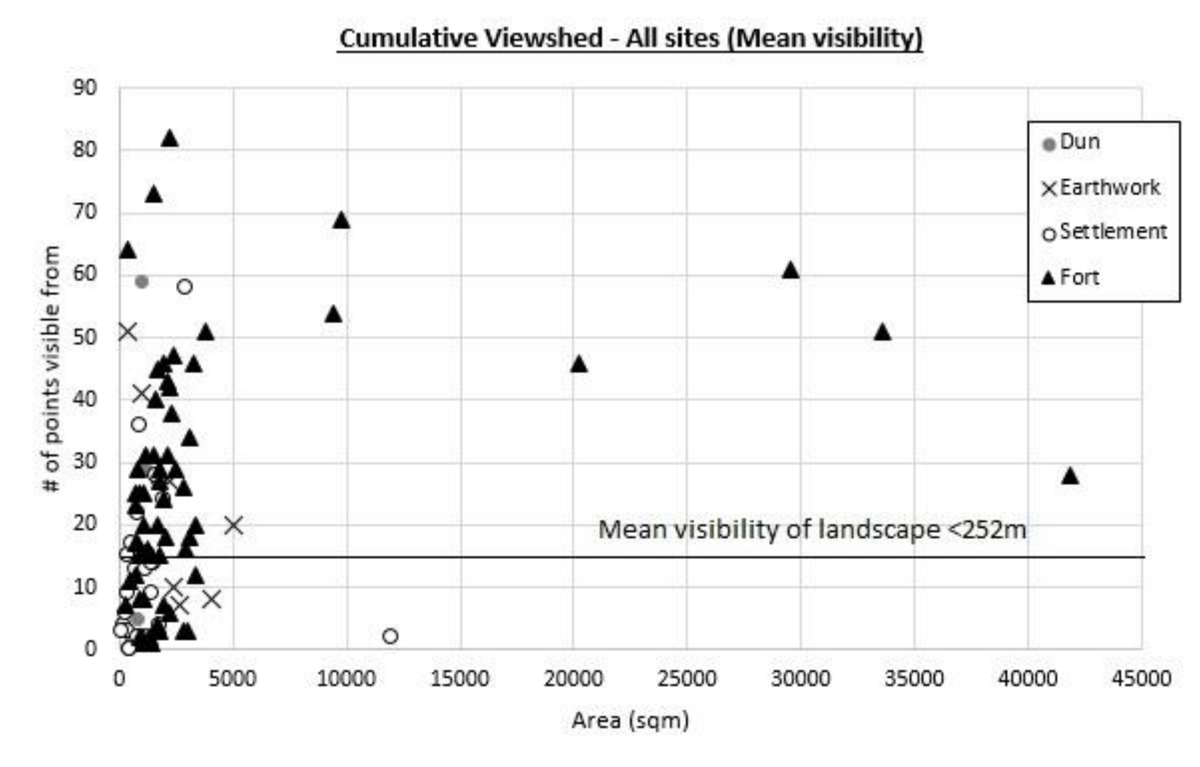

Figure 9.60: *The mean number of randomly-generated points that can see the land occupied by the site. Size T sites are well above the value of a mean pixel in the landscape.*

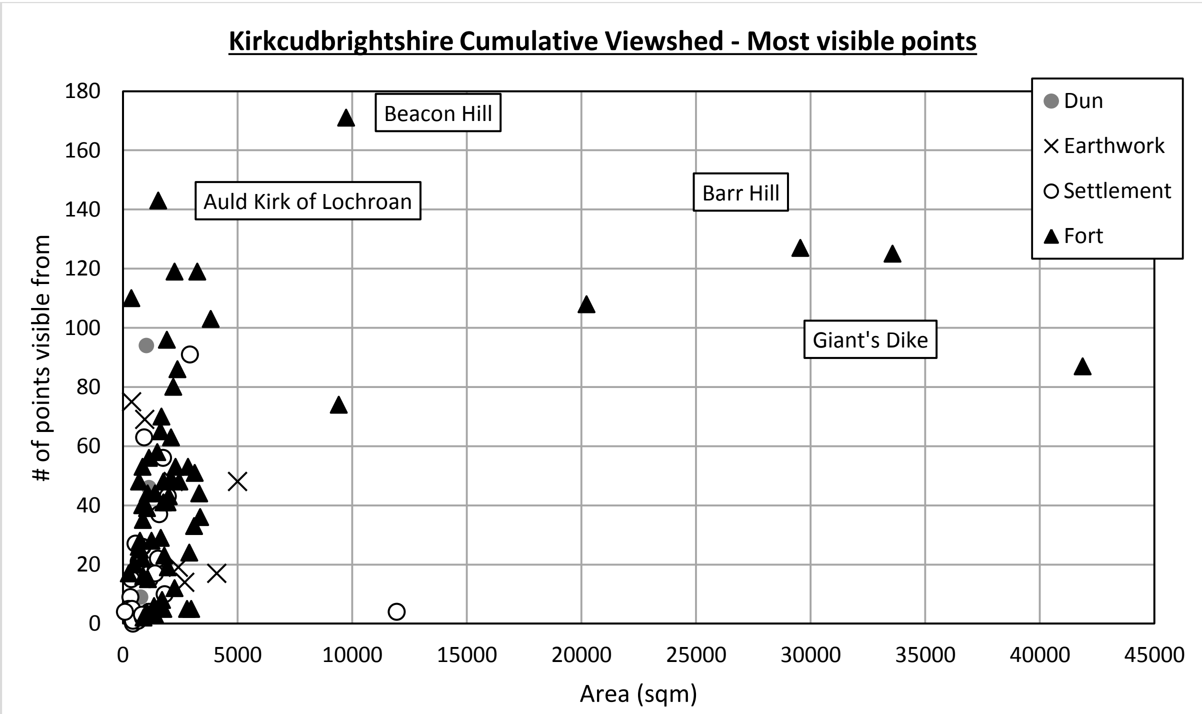

Figure 9.61*: The number of randomly-generated points that can see the site, using the most visible pixel in the interior of each enclosed. Size T sites stand out even more for their exceptional visibility.*

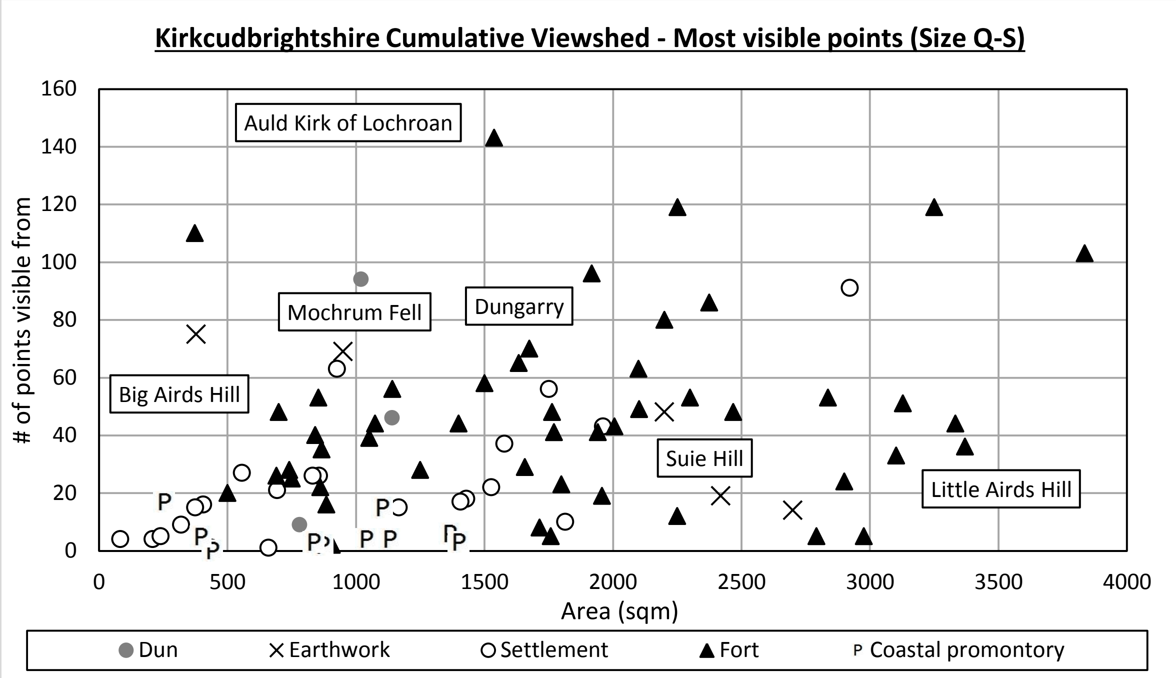

Figure 9.62*: The number of randomly-generated points that can see the site, using the most visible pixel on land occupied by each enclosed site.*

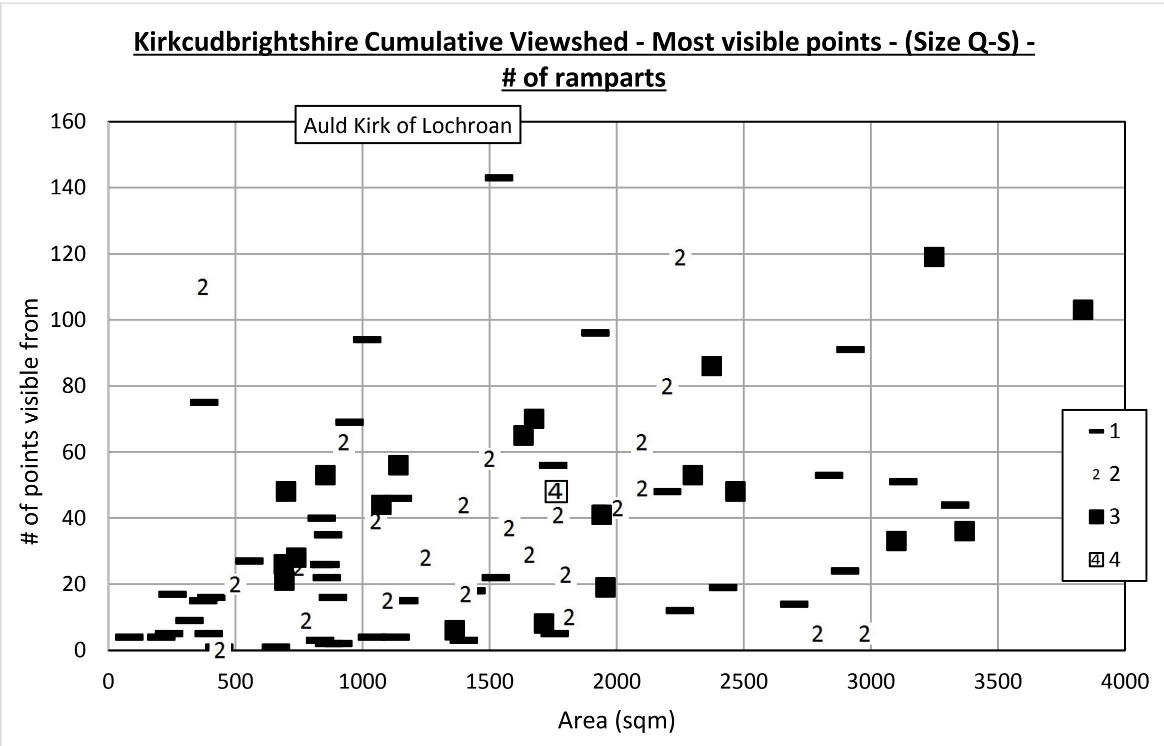

Figure 9.63*: The number of randomly-generated points that can see the site, using the most visible pixel in the interior of each enclosed site, categorised by number of ramparts. Multivallate sites are generally more visible.*

Ground occupied by sites classed as settlements is less visible than the general landscape below the height of the highest enclosed site (Figure 9.60). A 5 m by 5 m pixel on land occupied by forts and duns is, on the other hand, much more visible on average than ground of lower altitude in the wider landscape. Despite this, land occupied by many sites classed as forts is actually far below average in this regard, suggesting that there is considerable diversity in landscape position within the fort classification.

Size T sites are distinct in terms of size, altitude, and the mean visibility of the land that they occupy from all smaller sites, and this distinction is emphasised further when the most visible pixel enclosed is used in the analysis. Measured in this way, three of the four most visible sites in Kirkcudbrightshire are enclosures of this size – Beacon Hill, Barr Hill and Giant's Dike (Figure 9.61).

Beacon Hill is in the most visible place of any enclosed site in the case study and is positioned on one of the most visible hills of any height in Kirkcudbrightshire, in Nithsdale looking out over present-day Dumfries. It survives as a stony bank and single ditch, and today its extent can only be viewed on aerial photography, but given its size and location it may conceivably have been of some importance. This is also true of the bigger fort at Barr Hill, a 3 ha multivallate site, which has been badly plough damaged, on a prominent hill between Castle Douglas and Dumfries, south west of Beacon Hill. The third of these hilltop sites, Giant's Dike, is on an extremely prominent and visible hill (Barstobrick Hill) on the very southern edge of the uplands to the north of Kirkcudbright and west of Castle Douglas (See Figure 9.7). Unlike the other two mentioned sites its defences survive as visible lines of rubble with occasional visible facing stones and it has been visited and surveyed several times by RCAHMS and OS investigators since the Marginal Lands Survey in the 1950s. It has notably been compared to upland Welsh forts like Tre'r Ceiri, in terms of its size and construction and the RCAHMS noted that what was most remarkable about the site's defences was the degree to which they had been destroyed (RCAHMS 1950-9). It is overly simplistic to directly equate the condition of archaeological remains with age, the poor state of survival of this site as well as that of Beacon Hill and Barr Hill may suggest comparatively early dating for some of the prominent size T sites in Kirkcudbrightshire. Other than the sites mentoned, Moyle Hill and Dunguile Hill, two more size T forts that share these characteristics, are also in very poor condition.

The series of stone-walled high altitude sites between 1500 m^2 and 2100 m^2 previously identified as having shared characteristics (Section 9.2.1 & 9.2.2) are unexceptional in their visibility in the landscape – only Auld Kirk of Lochroan is among the most visible enclosed sites in Kirkcudbrightshire, while Suie Hill, Dungarry and Mochrum Fell are all middle ranked among forts in this regard (Figure 9.62). These sites were perhaps not positioned to dominate the landscape in the way that Giant's Dike or Moyle Hill may have been.

Among other enclosed sites whose visibility is not especially high few patterns exist. Size Q sites classed as settlements are not very visible from land (Figure 9.62). Similarly, promontory sites, regardless of size, are among the least visible enclosures. Most sites classed as forts can be seen by between 20 and 60 randomly-generated points, with a majority of the larger settlements also falling into this range. Many of these sites are on knolls or low hills less than 5 km from the coast with visibility of their locations from further inland blocked by high ground (i.e. the sites in the green, less visible region to the far south in Figures 9.54 & 9.55)

9.2.4 Visibility from sites in Kirkcudbrightshire

Through analysing visibility of the landscape from enclosed sites over 5 km and 1 km distances some striking differences in the relative visibility statistics of some individual sites become apparent, compared to the cumulative viewshed analysis (Figure 9.67 & 9.61). This is likely due to the proximity of the sea having a major negative effect on the visibility ratings of more southerly sites in the latter test. This highlights the necessity of making sure that archaeological interpretations based on the results of macro-scale landscape analyses, like the cumulative viewshed in this case study, are nuanced.

Thus, sites classed as forts like Big Airds Hill and Little Airds Hill, both very topographically prominent and close to the coast, actually have exceptionally high visibility of land within 5 km, but are merely average in terms of their visibility in the wider landscape of Kirkcudbrightshire (Figure 9.68 & 9.62). These two enclosures have vision of large tracts of land to north and west, and also have excellent sea visibility (e.g. Figure 9.66). They are only 500 m apart, with Big Airds Hill overlooking its neighbour (Figure 9.64 & 9.65). Little Airds Hill is, however, a more substantial structure, a multivallate earthwork that encloses almost twice the area of Big Airds Hill, which is only surrounded by a single poorly preserved stone rampart. Evidence seems to suggest that both entrances were pointing away from each other (RCAHMS 1950-9), and, considering the close proximity of the two sites and the differences in their architecture and morphology, it may be that they were not occupied contemporaneously. Little Airds Hill, specifically, encloses a greater area than the Mote of Mark, which is 6 km away along the coast to the north east, and is more prominent than that site in the landscape. If it were not for the excavated evidence from the latter, it would be understandable to consider Little Airds Hill as a better candidate to be a 'not farmstead' as previously defined (Chapter 2.1).

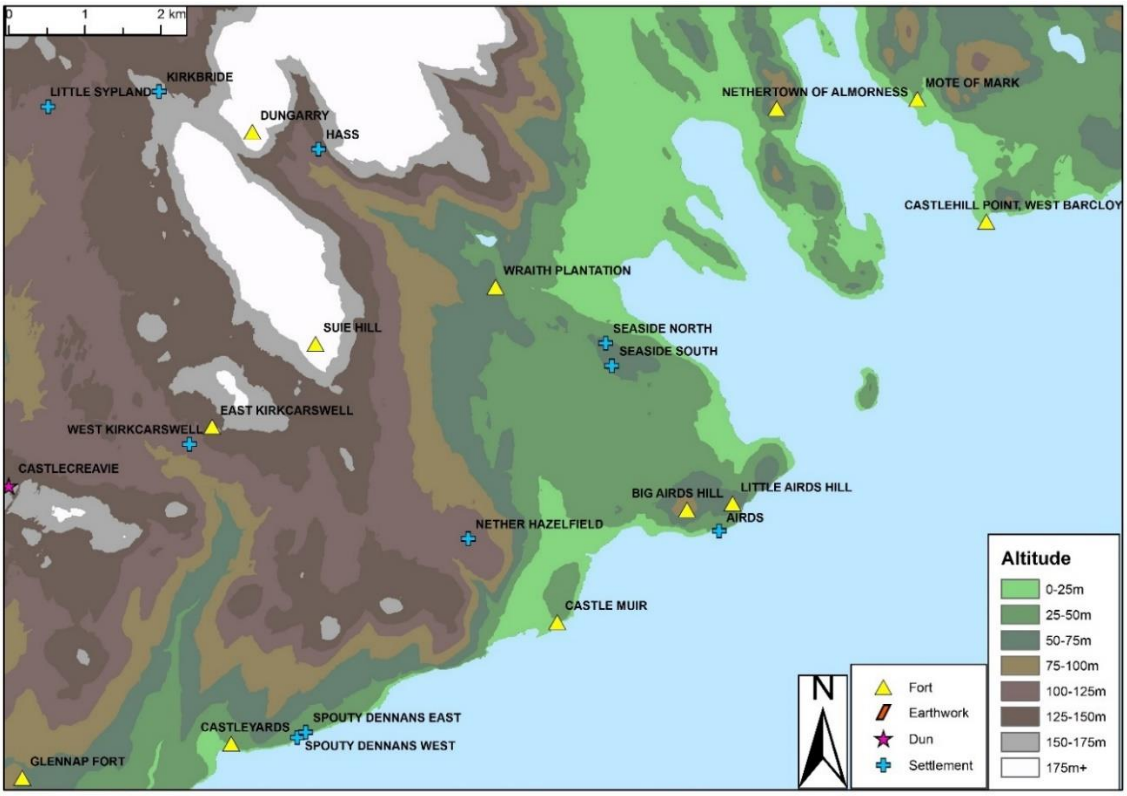

Figure 9.64: *Distribution map of Little Airds Hill, Big Airds Hill and surrounding area. Shows the two forts on topographically prominent coastal hills.*

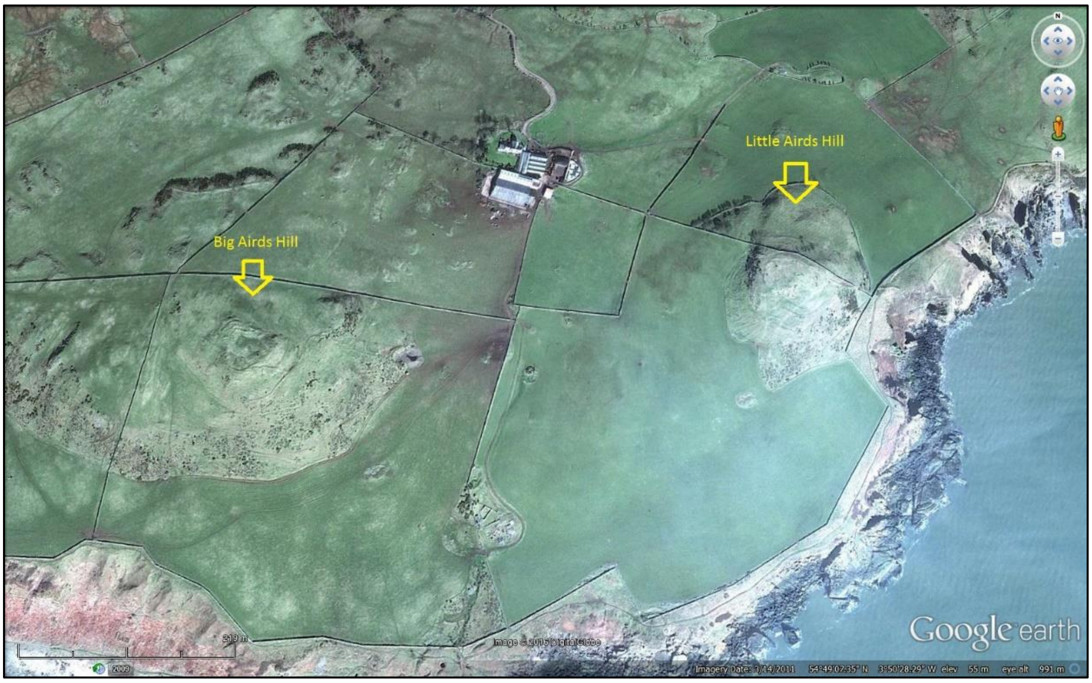

Figure 9.65: *Satellite image of the landscape position of Big and Little Airds Hill.*

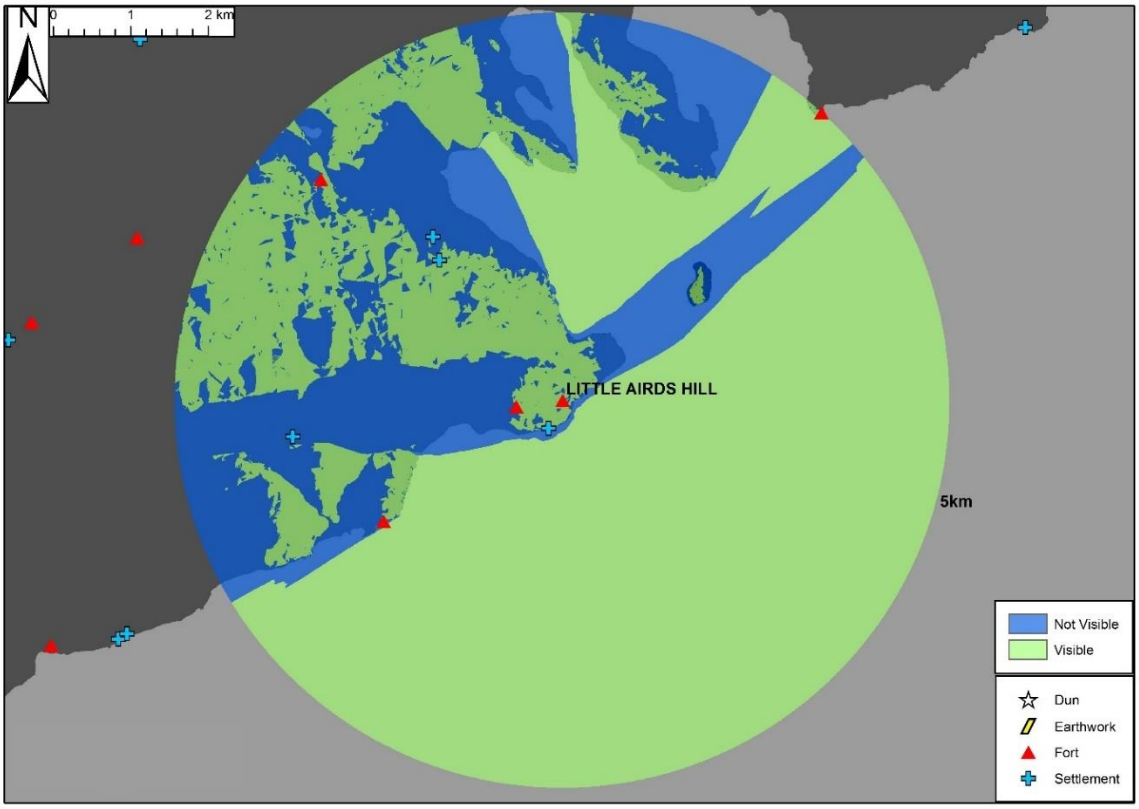

Figure 9.66: *5 km viewshed from Little Airds Hill, showing good visibility of land to north and west, and seaward.*

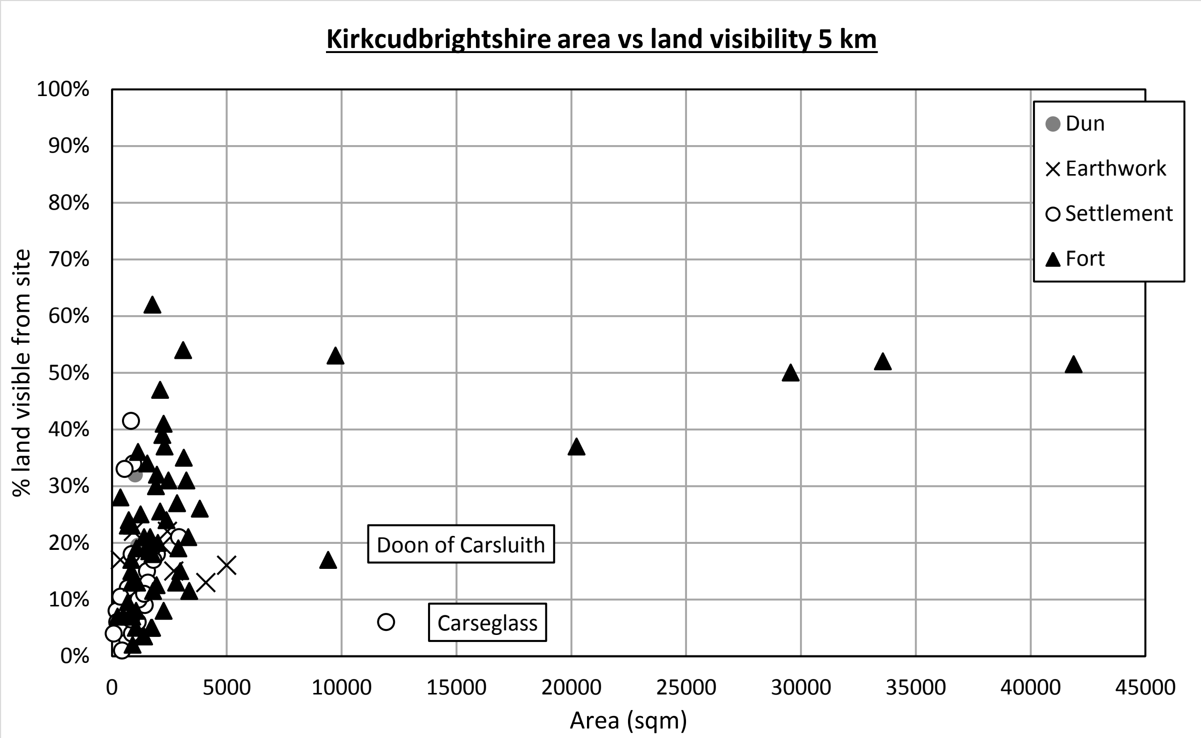

***Figure 9.67**: The percentage of land visible from sites within a 5 km radius. Most size T sites have comparatively excellent vision of land within 5 km.*

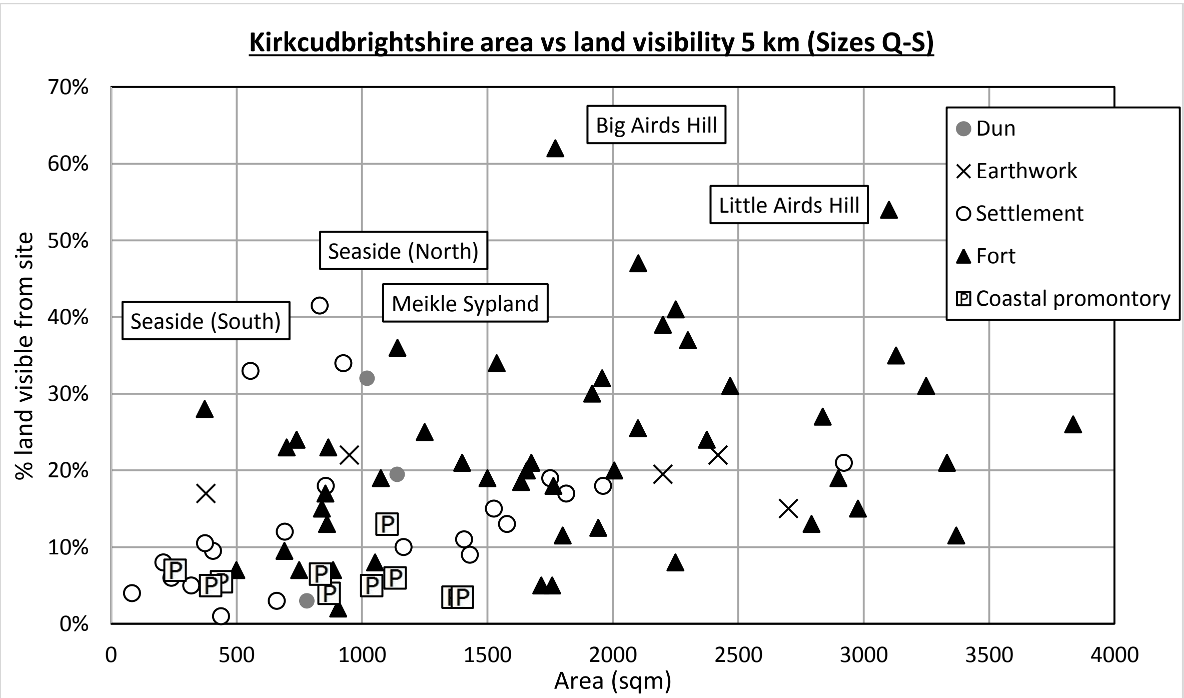

***Figure 9.68**: The percentage of land visible from sites within 5 km. Sites classed as settlements form a consistent grouping, with a correlation between increased vision and greater internal area. Three outliers are identified.*

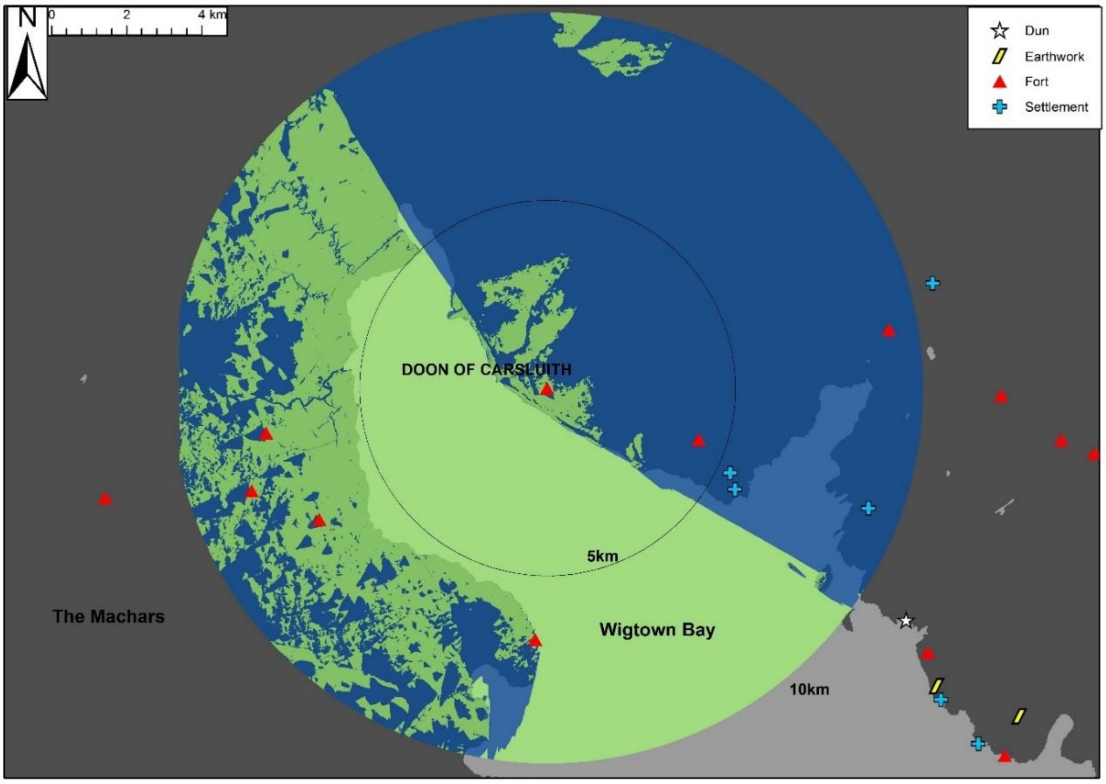

Figure 9.69: *10 km viewshed from Doon of Carsluith, showing superior long range visibility of land in The Machars and across Wigtown Bay, and poor neighbouring land visibility.*

The exceptional fields of vision from most of the large hilltop enclosures are even more apparent over the 5 km distance (e.g. Figure 9.70**)** although the opposite is true of Carseglass and the Doon of Carsluith (Figure 9.67). The latter has excellent long-range visibility of the low lying ground of The Machars and seaward of Wigtown Bay (Figure 9.69). The fort has poor vision of the land on its own side of that body of water, instead being positioned to see or be seen from either land further away from it, or Wigtown Bay. There may be similarities between the location of this site and the fort of Dun Cruinn on Skye (Chapter 8.2.4). The Doon of Carsluith is, however, a significantly bigger structure, in a more precipitous and easily defensible position. It is positioned apart from other sites, and from more productive areas of agricultural land (Figure 9.80), and it is reasonable to suggest that its primary function may not have been that of an agricultural settlement.

Most sites classed by the RCAHMS as settlements form a distinct pattern in Figure 9.68, showing a consistent positive relationship between internal area and visibility. This is likely to directly reflect the slight advantage that a larger site may have over a smaller one when constructing viewsheds from multiple points representing the extent of sites (See Chapter

7.2.4 & 6.2.1). This in itself reflects the naturally greater visibility of and from a larger structure in the landscape.

The clear outliers among the settlements are one size Q and one size R enclosure near Auchencairn both named as Seaside by the RCAHMS, and one size R site at Meikle Sypland. All three are curvilinear sites, defined as homesteads on OS mapping, and the latter was described as a 'mote' by Coles (1891, 371-4; Figure 9.71). Meikle Sypland is very prominent in its landscape (Figure 9.72) and it may be closer in character to other circular, slightly larger size S sites classed as forts such as Wraith Plantation than the smaller, more ephemeral size Q homesteads with which it is conventionally grouped. Both Seaside sites are situated on slight rises in large sectors of high ground, and are not especially topographically prominence locally. These three sites straddle the dividing line between Cowley's small stone-walled enclosures, or Cavers' homesteads (Section 9.1.2; Chapter 3.4), and forts or larger enclosed settlements.

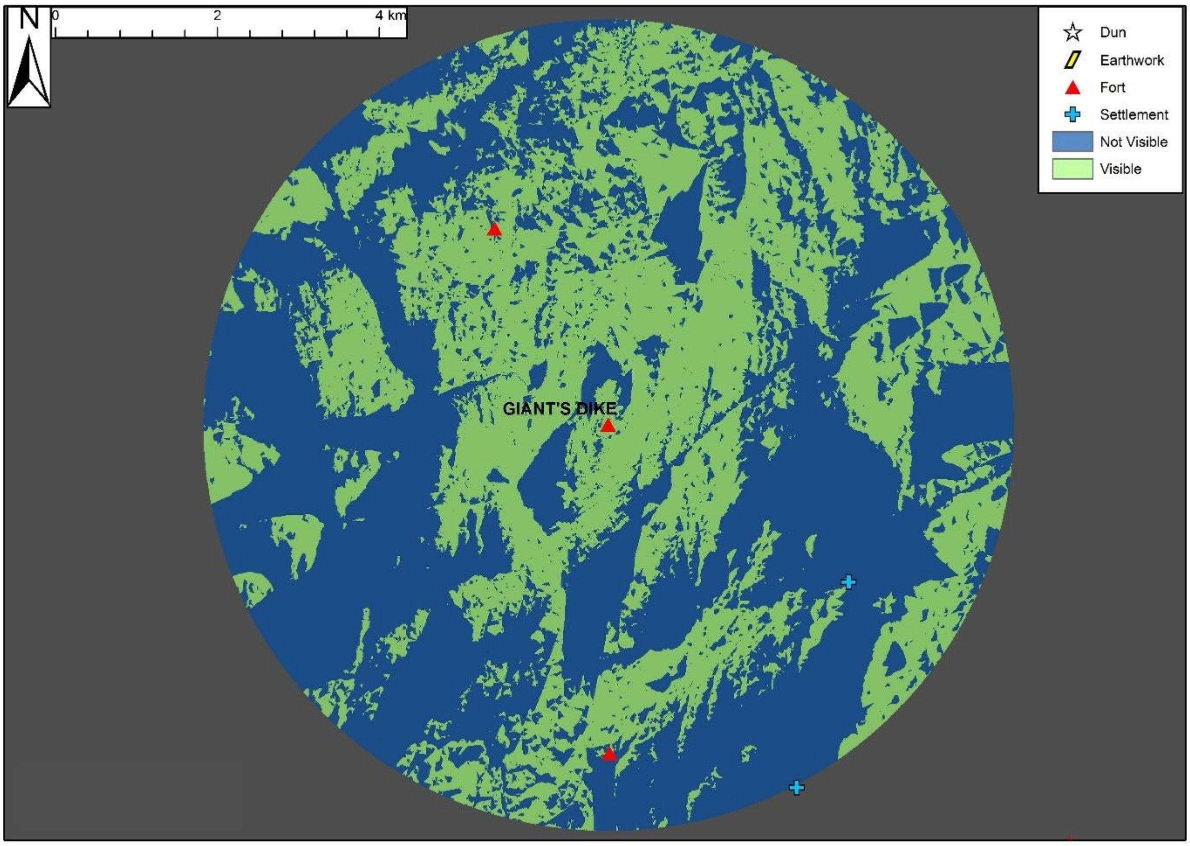

Figure 9.70: *5 km viewshed from Giant's Dike, exceptional all-around visibility of the landscape.*

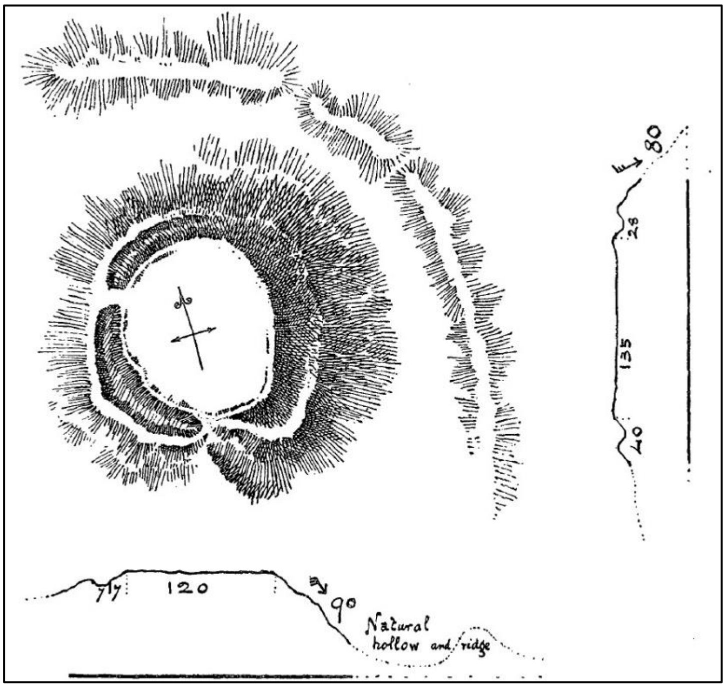

Figure 9.71: *Plan of Meikle Sypland (Coles 1891).*

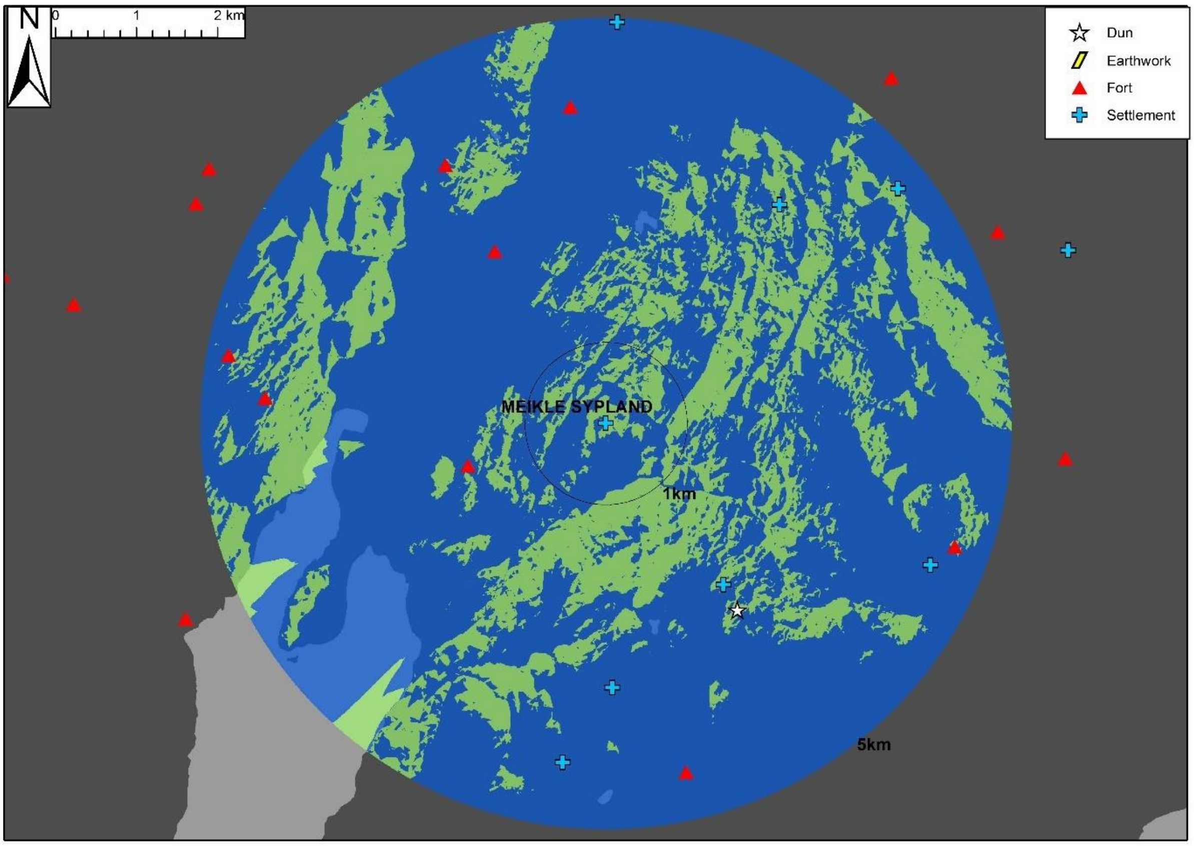

Figure 9.72: *5 km viewshed from Meikle Sypland, showing good visibility of surrounding area to north, east and south.*

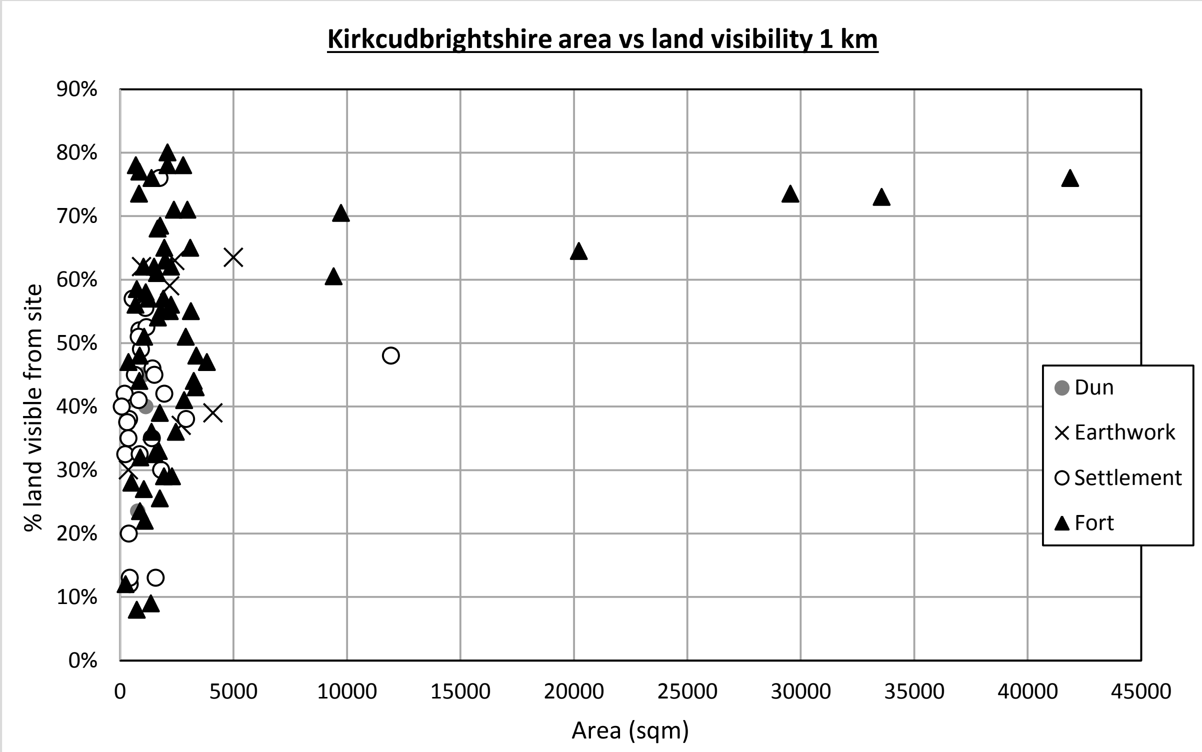

Figure 9.73: *The percentage of land visible from sites within 1 km. Size T sites have excellent visibility.*

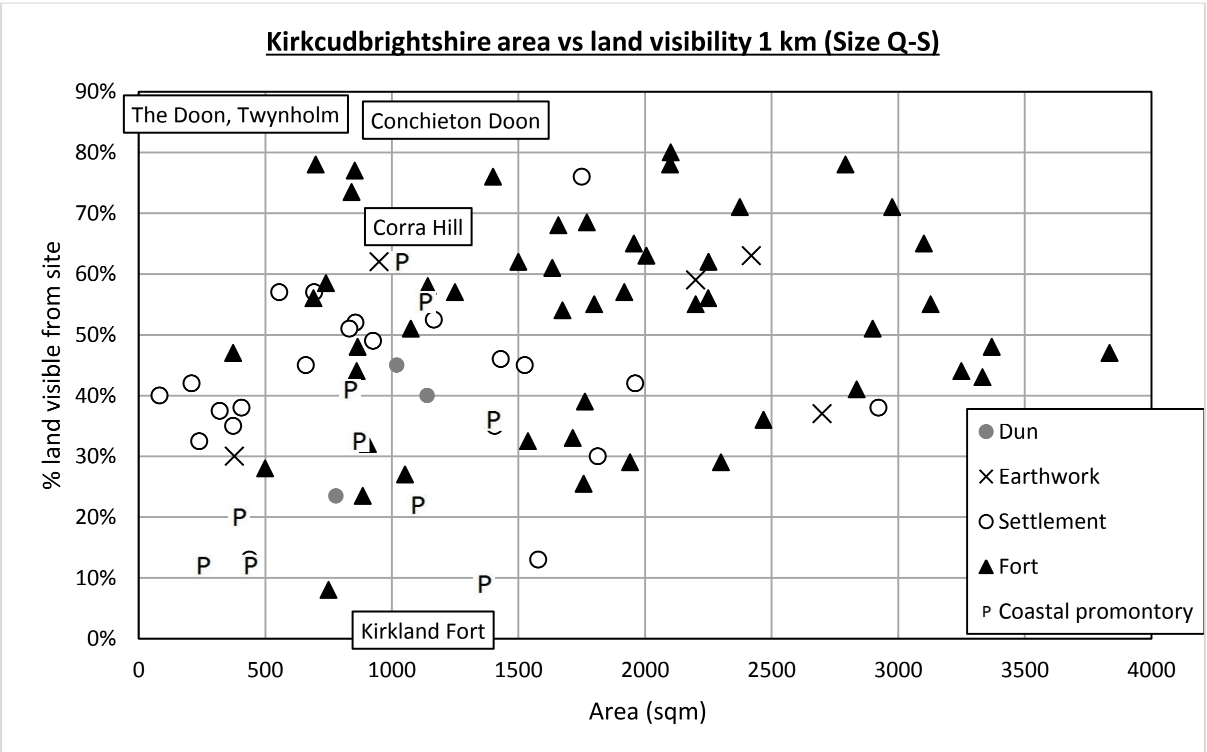

Figure 9.74: *The percentage of land visible from sites within 1 km. A general trend is apparent with a positive relationship between size and visibility.*

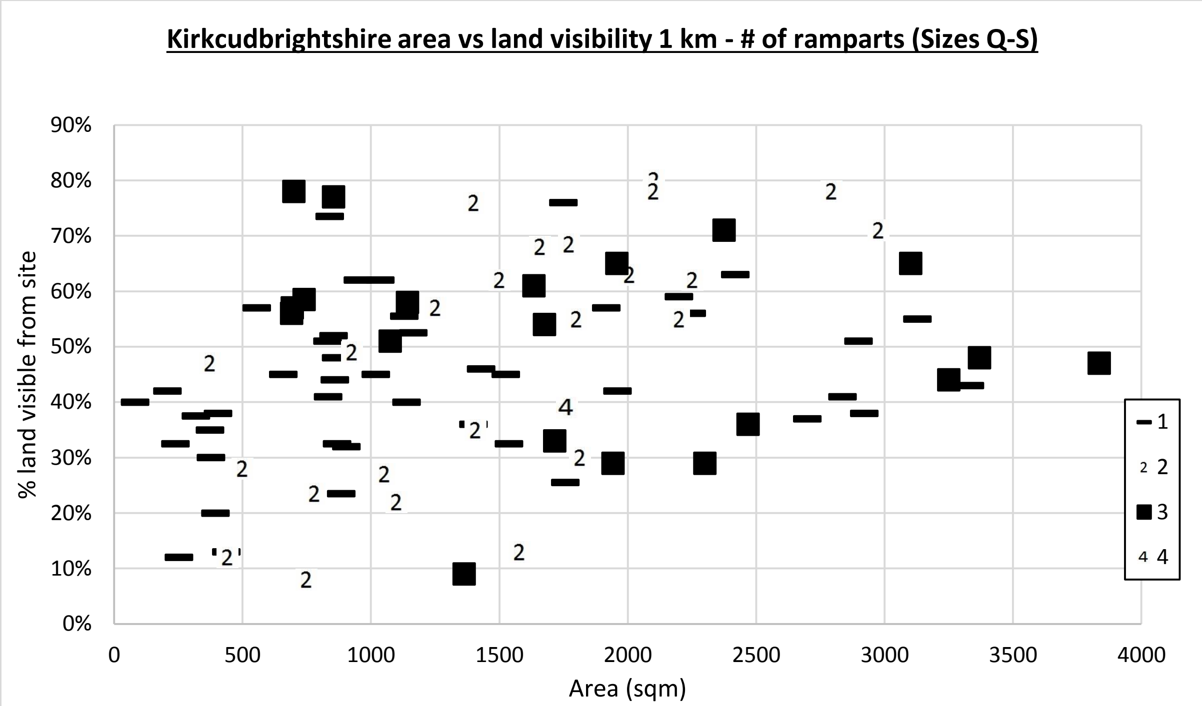

Figure 9.75: *The percentage of land visible from site within 1 km, categorised by number of ramparts.*

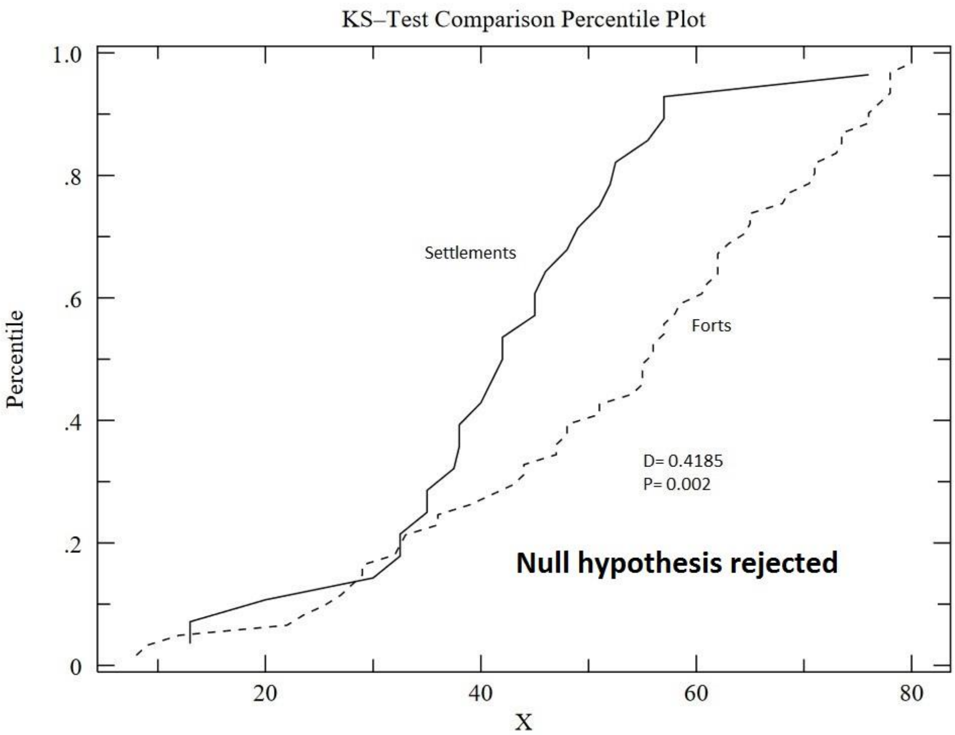

Figure 9.76: *K-S test comparing the visibility of land from sites classed forts and settlements within a 1 km distance. Forts conclusively have better visibility of their surroundings as a grouping.*

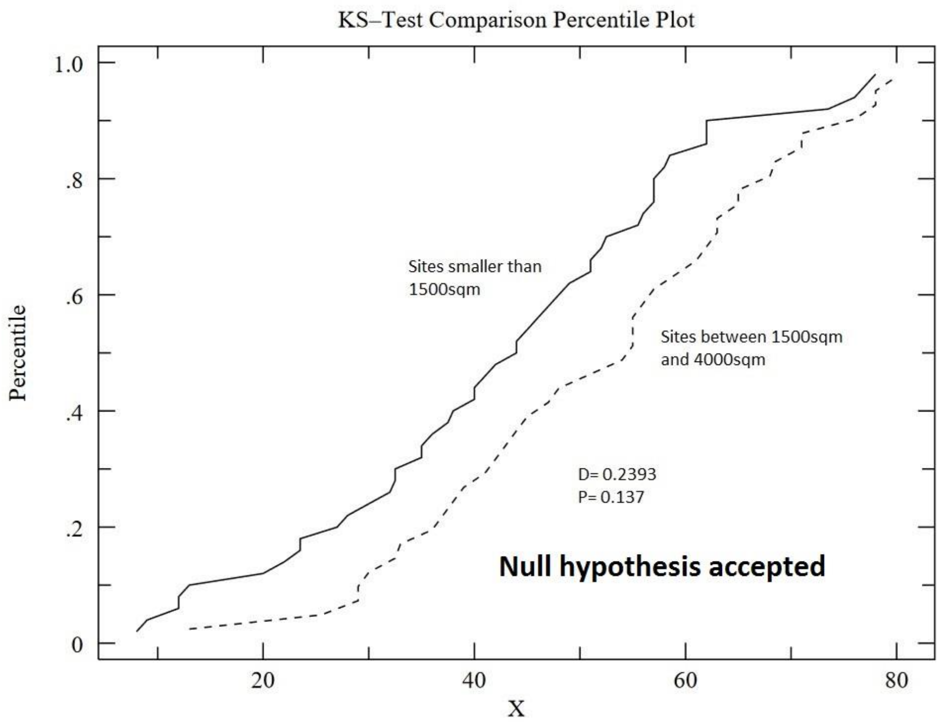

Figure 9.77: *K-S test comparing the visibility of land from sites smaller than 1500 m^2 with sites between 1500 m^2 and 4000 m^2 over a 1 km distance.*

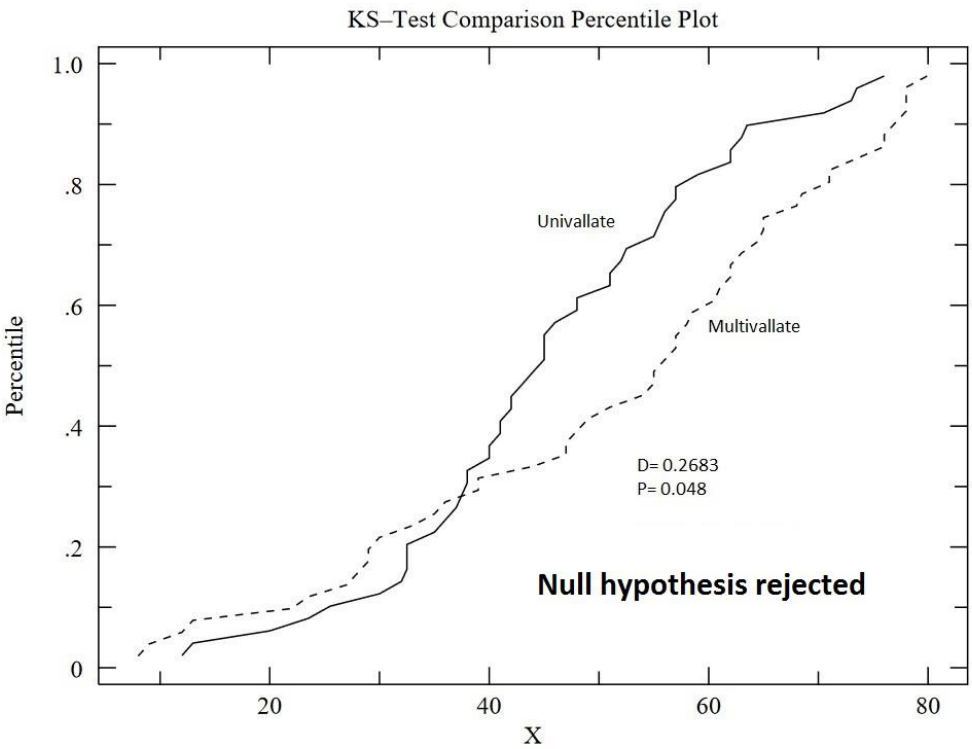

Figure 9.78: *K-S test comparing the visibility of land from univallate and multivallate sites within a 1 km distance. Multivallate sites have better visibility of their landscape.*

Over a 1 km radius there are conspicuous differences in the relative visibility of various sites compared to 5 km (Figures 9.73; 9.74 & 9.75; 9.67 & 9.68). Among the most visible sites over 1 km in the case study area are some size R enclosures, sites classed as forts between 700 m^2 and 850 m^2 – Corra Hill, The Doon Twynholm and Conchieton Doon (Figure 9.74). Kirkland Fort, a site of similar size and morphology to those three, has, in contrast, the poorest visibility of its surroundings of any enclosed site, able to see just 8% of its adjacent 1 km. Sites classed as settlements, on the other hand, are much more consistent, forming two distinct groupings. Size Q settlements can all see between 33% and 42% of their surrounding 1 km, while size R settlements have between 45% and 57% land visible over that distance. Both groupings show remarkable regularity compared to sites classed as forts. Forts are statistically likely to have very high visibility of their 1 km surroundings as a dataset relative to settlements (Figure 9.76). Also, among all size Q, R and S sites, those larger than 1500 m^2 in area have greater visibility of nearby land than those below that size, but not at a statistically significant level (Figure 9.77). Multivallate sites, however, are very likely to have greater visibility of their surrounding areas than univallate examples at a statistically significant level (Figure 9.78).

9.2.4.1 Summary

- Sites classed as forts are characterised by their variety, but mainly have greater visibility of their surroundings than settlements
- Settlements form more of a coherent group, and mostly have less visibility of the landscape than forts.
- Size T sites, as a group, have much higher visibility of the landscape than all smaller sites.
- Among all size Q, R and S sites, larger examples are likely to have greater visibility of the landscape, but the data is not conclusive. Few convincing patterns are visible among these sites.

The visibility data from Kirkcudbrightshire does not offer any convincing evidence for subdivision of the continuum of enclosed sites below 0.5 ha in the region. The comparative lack of patterns, compared to the Kintyre and Skye case studies, may be related to the much greater number of enclosed sites in Kirkcudbrightshire, perhaps representing a larger variety of site types. It may be that a more complex political structure is present in

Kirkcudbrightshire, or there could perhaps be evidence for different, temporally separated, social systems in the region (See Discussion, Section 9.3).

9.2.5 Proximity to agricultural land

Kirkcudbrightshire has wider tracts of agricultural land than Kintyre, and is much more fertile than Skye (Figures 9.79 & Figure 8.63). 27% of land in Kirkcudbrightshire today is arable, while 53% is of sufficient quality to be considered 'agricultural land' as defined in this thesis.

A general insight into the relationship between enclosed sites and farming land in Kirkcudbrightshire can be obtained from the map in Figure 9.79. All sites are roughly confined to the regions with most land that is coloured green or beige, while the purple areas in the north, west and east are largely devoid of later prehistoric settlement. The regions with poorer soils also, of course, combine their infertility with high altitude and steep topography. While it is likely that this contrast between later prehistoric settlement density in favourable agricultural and non-agricultural regions reflects an original trend, it may be exaggerated by remains being lost due to peat growth and large-scale planting of trees in upland areas, and by archaeological survey targeting places that researchers deem more likely to be suitable for settlement (Cowley 2000). It is interesting that very few enclosed sites appear to be placed on areas of darker green in Figure 9.79, and the few that are have been identified from aerial photography. It is probable that a significant proportion of the later prehistoric settlement record has been lost due to human activity on this land. Those enclosed sites that remain visible – the sites in this case study – are mainly on land rated 4.1 to 5.2 and seem to be situated adjacent to, or surrounding, the very best farming land, rather than directly on it. Whether this is a preferred type of location deliberately chosen by later prehistoric people or primarily a result of taphonomy can only be surmised at this stage, but there is a strong argument for the latter being the case.

A notable gap in the site distribution is the area of land ranked 4.2 in the Glenkens towards the centre north of the map in Figure 9.79. This is a region that was populated with farms, some arable, at the time of Roy's Military Survey of Scotland (See Appendix 2, Map 2) – i.e. before most agricultural improvement, and it is mostly pasture today. It is perhaps less likely that all archaeological evidence for prehistoric settlement would have been erased here than in more intensively farmed areas. There is also an absence of later prehistoric sites to the west of Dumfries and Nithsdale, between the large hilltop enclosures of Beacon Hill and Barr Hill (Figure 9.8 and 9.79). This area was heavily cultivated both on Roy's map and today, and intensive agricultural activity and improvement may account for the lack of sites. A third fertile area with few sites in the south east of the case study area near Southerness may be explained in a similar way. These gaps in settlement site distribution, particularly the one in the Glenkens, do, however, suggest that there is no straightforward correlation between later prehistoric sites and proximity to agricultural land.

Almost all sites in Kirkcudbrightshire are located close to or amongst large tracts of agricultural land as defined by this author. Due to the much greater hectarage of agricultural land in Kirkcudbrightshire compared to the other case studies, most sites have a broadly positive relationship with it. Those sites that stand out for not adhering to this pattern are some of the size T sites and smaller, drystone, upland forts, like Suie Hill and Dungarry (Figure 9.80 & 9.81). The same sites that stood out as a group in the altitude and topographic prominence analyses (Section 9.2.1 & 9.2.2) are again distinct, with a considerably lower proportion of their 1 km surroundings comprised of agricultural land, emphasising that they may be different in conception from the majority of enclosed sites. That the size R fort of Nethertown of Almorness has much less agricultural land within 1 km than the bulk of sites is noteworthy – it is also a prominent, oblong drystone fort with outer defences. Described by RCAHMS Marginal Land Survey investigators as 'of the same type as Trusty's Hill' (RCAHMS 1950-9), it may alternatively (or additionally) be similar to Suie Hill, Dungarry or Auld Kirk of Lochroan, but located on a lower coastal hill.

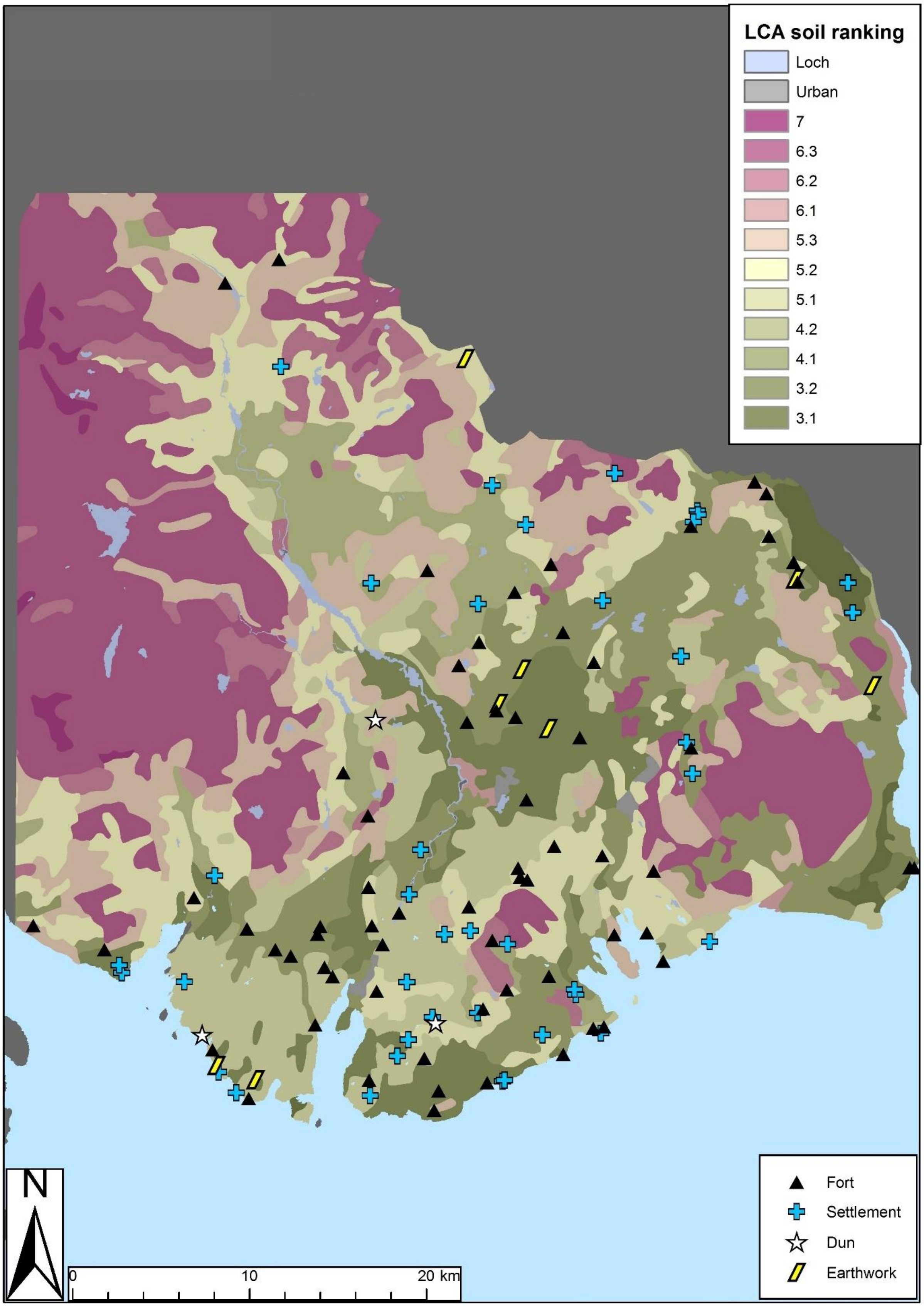

Figure 9.79: *Enclosed sites in Kirkcudbrightshire overlaid on National Soil Survey Land Capability for Agriculture mapping.*

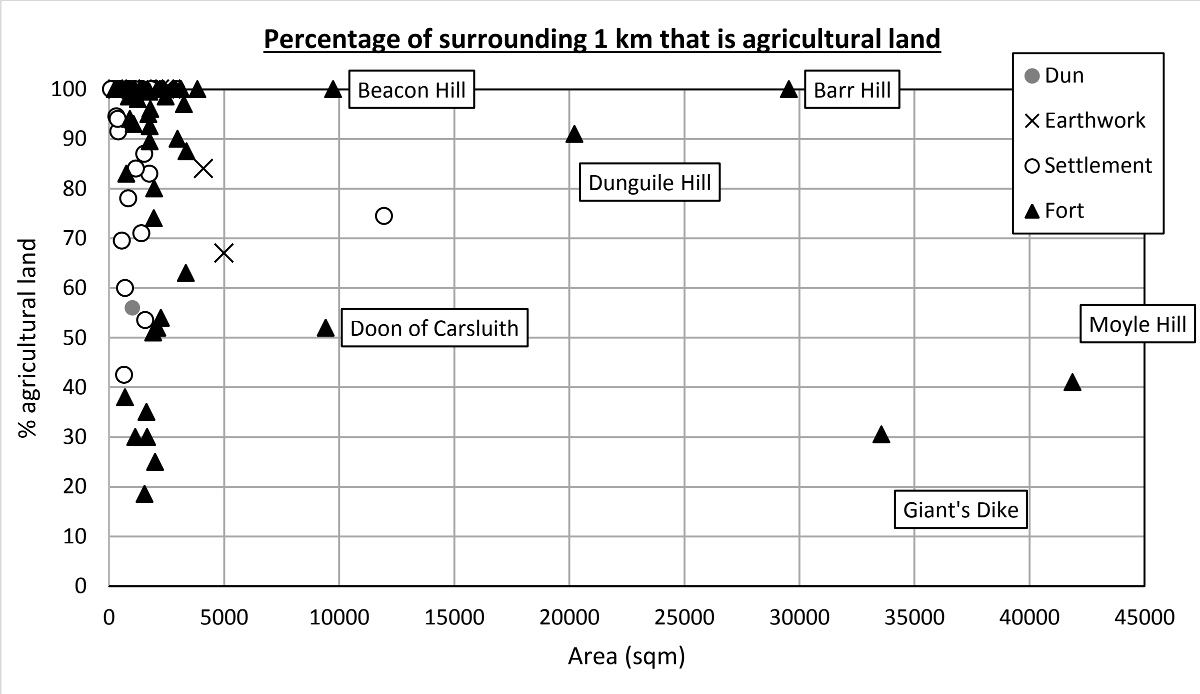

Figure 9.80: *The percentage of the 1 km radius of each enclosed site that is agricultural land. Three size T forts are in sectors with lesser agricultural land, while a large majority of size Q, R and S sites have 5 km surroundings that are almost completely agricultural.*

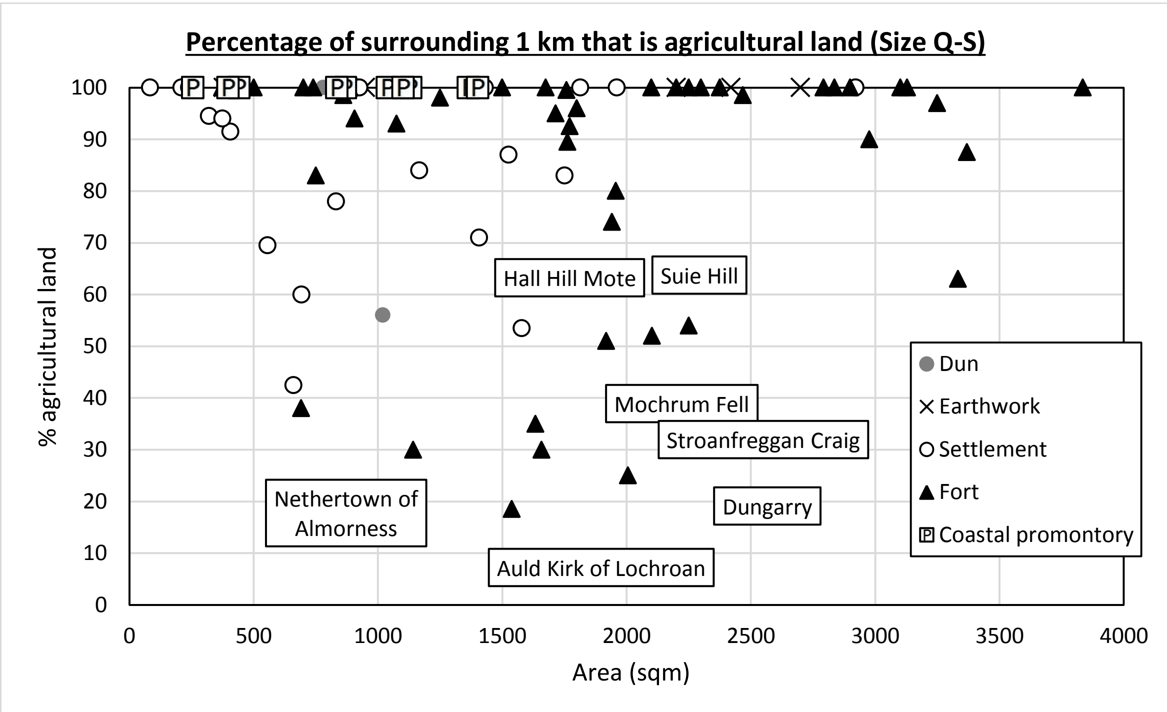

Figure 9.81: *The percentage of the 1 km radius of each enclosed site that is agricultural land. A possible grouping of sites classed as forts that have less agricultural land nearby is identified.*

Type	% of 5 km surroundings that is agricultural land (average)	Area of agricultural land within 5 km (m^2) (average)	% of 1 km surroundings that is agricultural land (average)	Area of agricultural land within 1 km (m^2) (average)
Total case study area	52.6		52.6	
All sites	81.1	52329495	86.4	2435603
Settlements	79.9	50658510	88.7	2460252
Duns	86.3	54323725	85.3	2272153
Earthworks	83	52734218	93	2726135
Forts	81.2	53433601	84.6	2398378
Size Q	88.6	52958619	96.1	2640873
Size R	82.5	51640264	87.7	2318897
Size S	79.6	52517832	85.1	2482914
Size T	71.1	52509817	69.9	2160714

Table 9.2: *The average area of agricultural land within 5 km and 1 km and the percentage of land within that radius that is comprised of agricultural land.*

Data from the GIS-based analyses of the relationships between the enclosed sites of Kirkcudbrightshire and the agricultural land of the region are summarised in Tables 9.2 & 9.3. As a grouping, size Q sites tend to be surrounded by more agricultural land than larger sites. This is especially true of the 1 km radius; 264 ha of agricultural land lies within that distance of an average size Q site – 96.1% of its total inland surroundings. In contrast, size T site have the smallest hectarage of favourable farming land nearby, perhaps because of their hilltop positioning.

Sites classed as earthworks have among the highest percentage of agricultural land within 1 km, presumably a product of the classificatory system – fortifications that have been ploughed or otherwise affected by comparatively recent agricultural activity may be more likely to survive as earthworks that defy more specific categorisation. Therefore sites in fertile regions intensively farmed in modern times may be more likely to be classed as earthworks.

9.2.6 Agricultural land visibility

Type	% of land visibility that is agricultural land 5 km (average)	Area of visible agricultural land 5 km (m^2) (average)	% of land visibility that is agricultural land 1 km (average)	Area of visible agricultural land 1 km (m^2) (average)
Total case study area	52.6		52.6	
All sites	81.6	10706777	87.4	1183620
Settlements	79.3	6393603	89.9	1010176
Duns	85.8	10341928	85	828812
Earthworks	83.1	9859335	93.1	1392225
Forts	82.2	12836703	85.8	1257964
Size Q	84.6	5431260	94.9	856135
Size R	82.1	8575776	89.2	1113934
Size S	81.9	11777234	86.5	1277390
Size T	70.8	22288622	71.9	1460939

Table 9.3: *The percentage of sites' landward viewsheds that is agricultural land and the area of agricultural land visible within 5 km and 1 km radii.*

When visibility of land is taken into account, the majority of the inland viewsheds of all sites are comprised of agricultural land over 5 km and 1 km distances (Table 3). While all enclosed sites have some farming land nearby, some are better placed with respect to visibility of that land, with vistas stretching out over large tracts of regions with favourable soils and terrain, while vision from others may be targeted on smaller, local parcels of agricultural land. The dominating position that the largest sites have over agricultural land in Kirkcudbrightshire is underlined by their exceptional visibility of that land – size T sites can see a mean 2228 ha of farming land over the 5 km distance, more than twice the average for all enclosed sites in the case study. Size T sites can see a greater extent of agricultural land than other sites over the 1 km distance, but the relative difference between size T and sizes Q, R and S is much smaller. This data suggests that the positions occupied by the largest enclosures have excellent long-distance visibility of and from wide tracts of agricultural land. It is uncertain, but definitely possible that these locations were chosen for that reason.

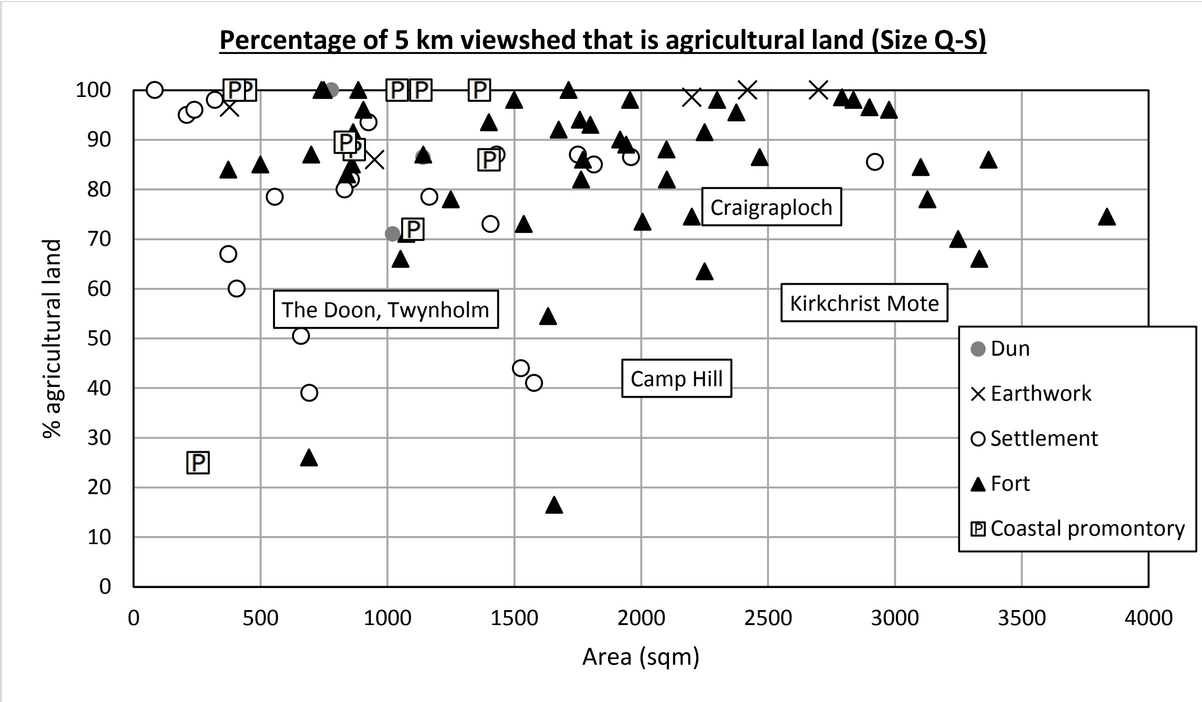

Figure 9.82: *The percentage of each site's 5 km land viewshed that is agricultural land. Most sites classed as forts have primarily agricultural land in their viewsheds.*

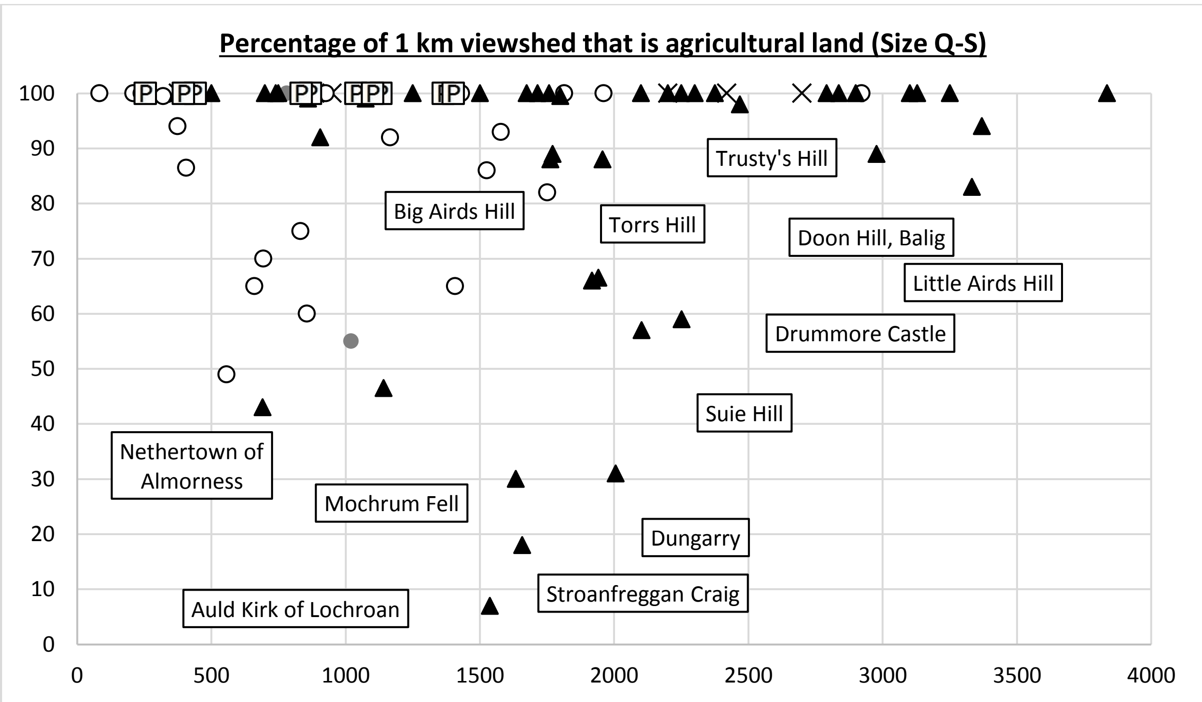

Figure 9.83: *The percentage of each site's 1 km land viewshed that is agricultural land. Most sites classed as forts have nothing but agricultural land in their viewsheds. Outliers are identified.*

The majority of enclosed sites classed as forts have primarily agricultural land in their 5 km viewsheds (Figure 9.82) and have vision of nothing but agricultural land within 1 km (Figure 9.83). Most of these sites are situated in the low-lying regions around Castle Douglas and Kirkcudbright, and many of them are on knolls in that rolling landscape, or small hills in still fertile areas on the margins of the lowlands (e.g. Figures 9.7 & 9.8). Many have been badly plough damaged, for example Kirkchrist Mote, The Doon (Twynholm) or Camp Hill (Girthon), and survive as earthworks or cropmarks/soilmarks. Most of these sites are only moderately topographically prominent in their localities, in comparison to the size T hilltop enclosures or the grouping of size S upland drystone forts. Among this large and diverse grouping of sites, however are some prominent forts like Big Airds Hill, Little Airds Hill, Trusty's Hill and Drummore Castle that have excellent visibility of agricultural land.

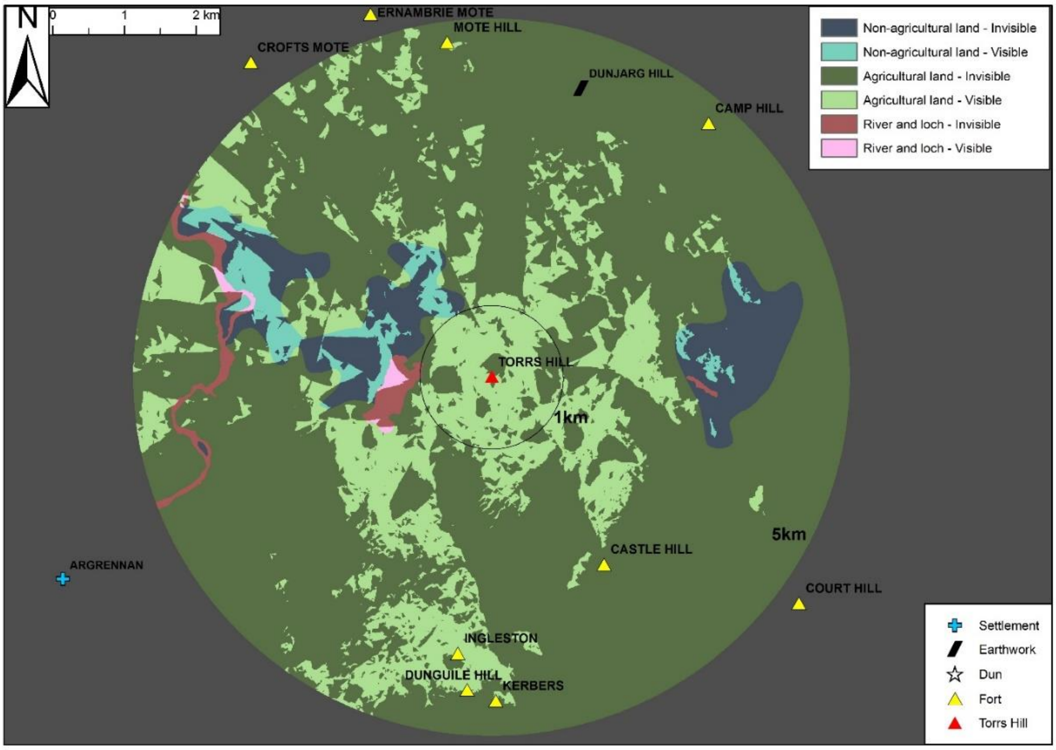

Figure 9.84: *5 km visibility of agricultural land from Torrs Hill, a size S site classed as a fort. The site is located among large tracts of farming land, and has vision of a large area of that land.*

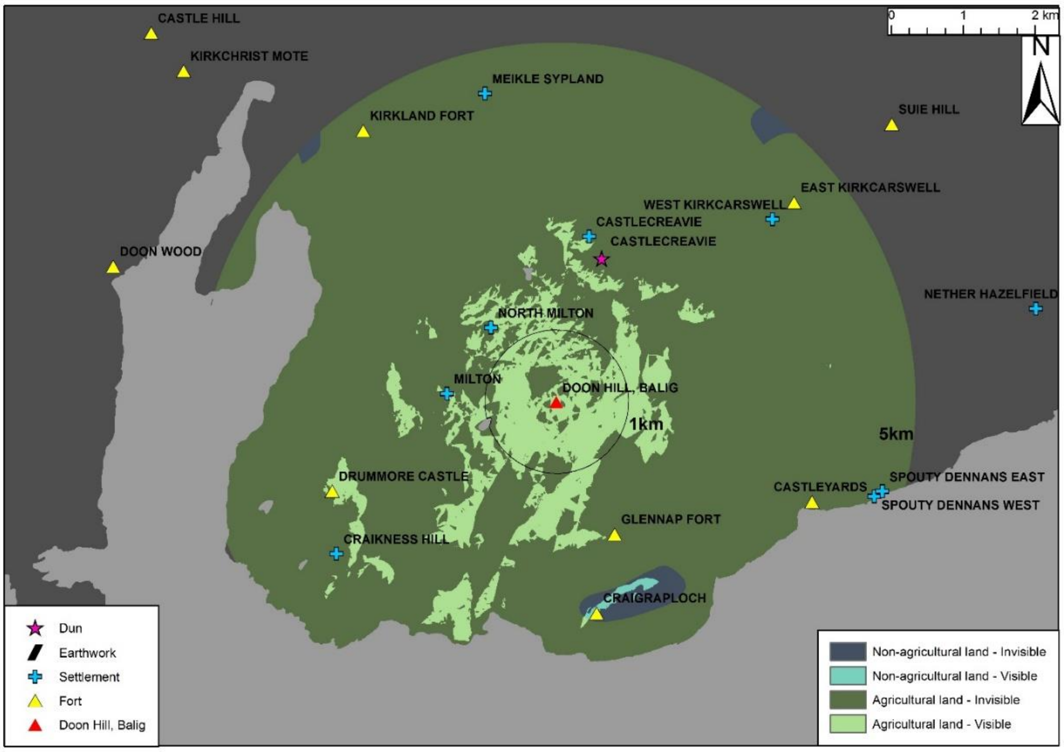

Figure 9.85: *5 km visibility of agricultural land from Doon Hill Balig, a size S site classed as a fort. This shows that the 5 km radius of the site is comprised of almost nothing but agricultural land, and it has wide visibility of that land as far as approximately 2 km from the site.*

Two representative examples of the positioning of sites classed as forts in Kirkcudbrightshire are Torrs Hill and Doon Hill Balig (Figure 9.83, 9.84 & 9.85). The former is a locally prominent site with excellent visibility of its surroundings situated in rolling countryside 1 km south east of Castle Douglas. Badly plough-damaged, and today nearly invisible on the surface, it is an oval, bivallate earthwork of average size (just over 2000 m^2) for an enclosed site in Kirkcudbrightshire. It is completely surrounded by agricultural land – indeed its 1 km viewshed is entirely made up of that land (Figure 9.85). Doon Hill Balig is quite topographically prominent, and situated south east of Kirkcudbright, approximately 3 km inland. A circular, bivallate earthwork, with two rock-cut ditches, little was determined about the nature of the site from a watching brief carried out in the early 1980s (Crone 1981). It encloses an area of similar size to Torrs Hill, and has nothing but agricultural land in its 1 km viewshed – indeed even its 5 km radius is made up almost exclusively of agricultural land (Figure 9.84). These two sites are as close to typical, for an enclosure classed as a fort, in terms of their size, prominence, proximity to and visibility of agricultural land, as can be identified in this case study. There are many similarly situated forts throughout the region.

Size Q sites are invariably positioned amongst farming land, albeit the character of their viewsheds suggests that they are visually targeted on smaller patches of that land than the larger enclosures described above. A good example is Gillfoot Mote, in the valley of the River Dee to the north of Kirkcudbright (Figure 9.86). Certainly not a medieval mote, this site is a tiny, circular univallate earthwork on one of a series of small hillocks, described as 'typical of many Galloway homesteads' by an OS investigator (canmore.org.uk/site/64516). This river valley is quite fertile, albeit not the most fertile land in Kirkcudbrightshire - mainly graded 4.2 and 5.1 by Land Capability for Agriculture rankings - and Gillfoot Mote's visibility of it is restricted to a narrow band within the valley, with excellent vision of the 1 km area around it. Similarly, McNaughton's Fort has good visibility of agricultural land within approximately 1.5 km, with visibility of poorer land beyond that distance to the east possibly a consequence of that ground being naturally more visible high ground on the opposite side of a river valley (Figure 9.87). A multiperiod site, as determined by Scott-Elliot's excavations (Scott-Elliot et al 1966), it and the comparably sized settlement of Barnsoul and another similar enclosure further south (Doon Hill) are all clustered within 1 km of each other, with visibility of the same patch of agricultural land.

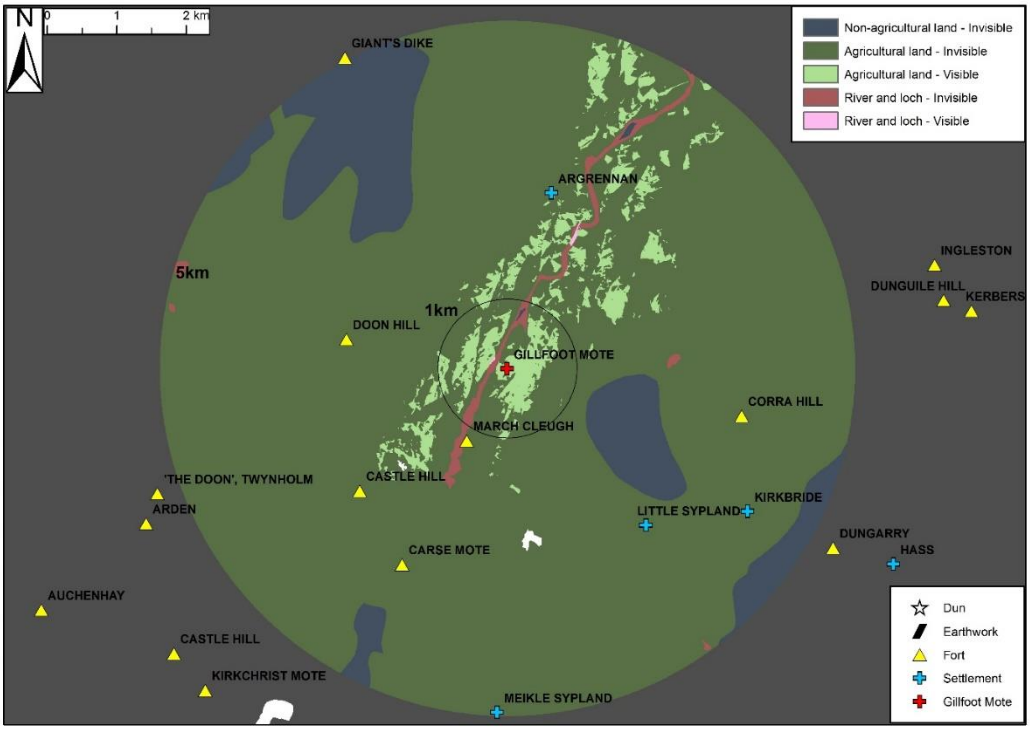

Figure 9.86: *5 km visibility of agricultural land from Gillfoot Mote, a size Q site classed as a settlement. The site's vision is restricted to land within the river valley, particularly the 1 km radius of the site.*

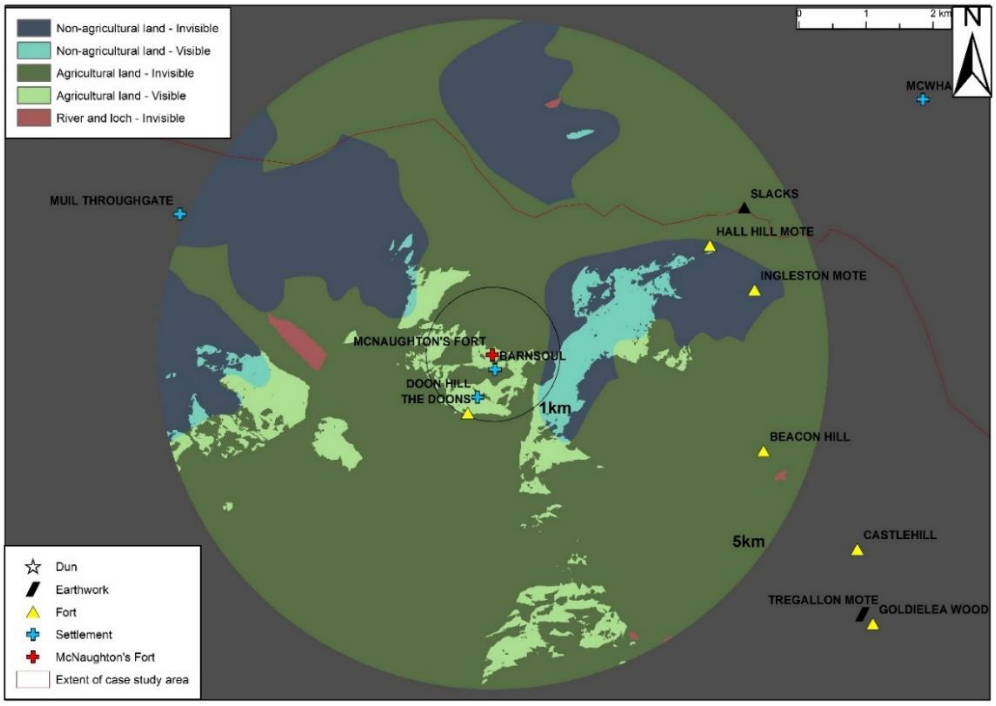

Figure 9.87: *5 km visibility of agricultural land from McNaughton's Fort, a size Q site classed as a settlement. The site is again situated within a valley, and vision from the site is of the unfertile slopes surrounding the valley and a local parcel of agricultural land.*

A series of sites classed as settlements larger than the previous group, in size class R, stand out as having a lesser percentage of agricultural land both within their 1 km viewsheds (Figure 9.83) and their 1 km surroundings (Figure 9.81). These are mainly univallate, stone-walled and somewhere between oval and sub-circular in shape, and tend to have excellent vision of surrounding land, particularly within a 1 km radius (Figure 9.74). Notably, despite this excellent local visibility, these sites do not have obviously greater topographic prominence and are not located at a higher altitude than other settlements (Figure 9.21, 9.29 & 9.30). A number of these size R enclosures are positioned in more agriculturally marginal areas, with two good examples of this placement being enclosures at Bargrug and Hass (See Figure 9.10).

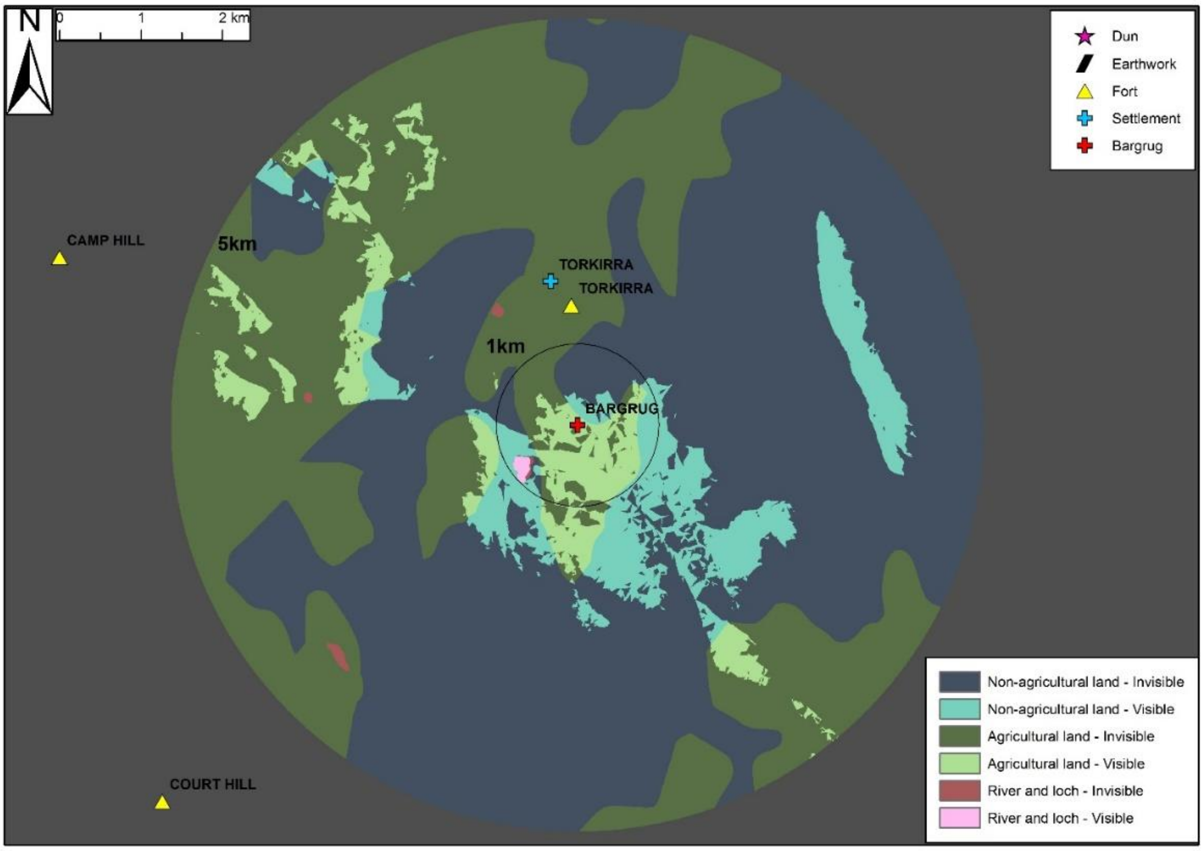

Figure 9.88: *5 km visibility of agricultural land from Bargrug, a size R site classed as a settlement. Situated on the margins of fertile land, can only be visually and spatially associated with a small area of agricultural land up to 1 km from the site.*

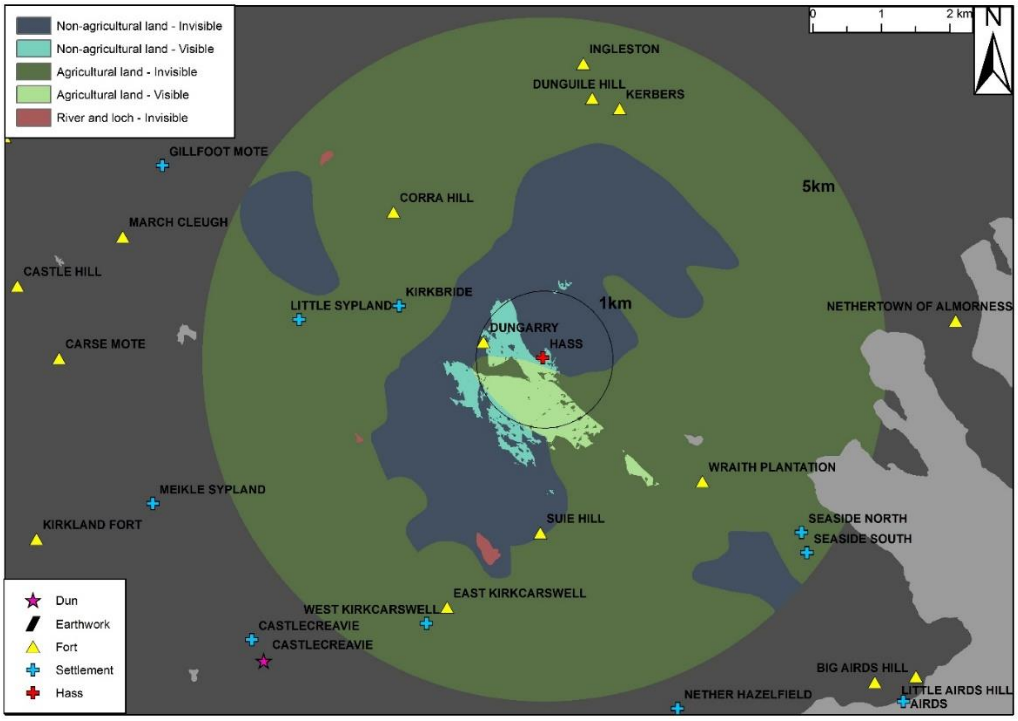

Figure 9.89: *5 km visibility of agricultural land from Hass, a size R site classed as a settlement. Marginally located with respect to farming land, vision from the site is of the slopes above it and agricultural land within 1 km of the site.*

Drystone upland forts between 1500 m^2 and 2100 m^2 form a distinctive grouping in terms of their 1 km visibility of and proximity to agricultural land (Figures 9.81 & 9.83). In contrast to the size Q and R settlements described above they cannot be easily associated with a small local tract of farming land and they are not situated amongst the widest expanses of fertile land in Kirkcudbrightshire. Rather they are spatially removed from that land, located on craggy hills surrounded by moorland, in locations with much greater visibility of agricultural land at longer distances than locally. An excellent example of this is Auld Kirk of Lochroan (Figure 9.90 & 9.91), today situated in a plantation on an extremely prominent hill adjacent to Loch Roan in the uplands north of Castle Douglas. The 1 km surroundings of the site are not favourable to agriculture, but the position where the fort is situated has excellent vision of Loch Ken and its surrounding land to the east and south east (Figure 9.90). A region of agricultural land that is surprisingly devoid of later prehistoric enclosed sites, this area is graded 3.2 by the LCA rankings, making it among the most fertile in Kirkcudbrightshire. The fort of Auld Kirk of Lochroan is extremely visually prominent from this land, and, in return, occupants of the site would have had excellent views of activities taking place on and around the loch.

Suie Hill's landscape position has much in common with this - it is on a very prominent hill, immediately surrounded by less fertile land, with exceptional longer distance visibility of what is today arable land near Auchencairn (Figure 9.92). Suie Hill is closer to agricultural land than Auld Kirk of Lochroan – the site is just 300 m from what is today the closest area of improved pasture (Figure 9.93), but its commanding position overlooking all the best farming land in the region is equivalent. Notably, the positions occupied by these sites have resulted in vision directed in particular directions – they do not have good visibility in every direction, they cannot be seen from everywhere. It is probable that their locations reflect orientation towards the land and/or settlement sites that most concerned them. The architecturally comparable site of Dungarry is even more spatially removed from the best land in the case study area (Figure 9.94). It is on a less prominent hill than Suie Hill, as noted in the topographic prominence analysis above (Section 9.2.2), and the higher summits of Bengairn and Bentudor to the north and Barcloy Hill to the south greatly affect its visibility of the landscape. Like the other sites in this grouping, the percentage of its 5 km viewshed that is agricultural land is much higher than the more local, 1 km, viewshed, with good visibility of agricultural land to the south east and west/north west.

Finally, the smaller, size R, fort of Nethertown of Almorness previously identified as a potential member of this group (Section 9.2.5) may show a similar pattern with respect to its visibility of agricultural land. It is on a low but prominent hill on a less fertile headland projecting into the Solway Firth. Very visible from sea, the inland visibility of its location is oriented to the west towards an area of higher quality agricultural land north of Auchencairn (Figure 9.95). This fort is smaller and at a lower altitude than the other sites identified as part of this grouping, yet if these prominent, oval, drystone enclosures are a definable chronological phenomenon or had a distinctive function within later prehistoric societies, there may be examples in regions without hills of high altitude. Despite its small size and comparatively low altitude, Nethertown of Almorness shares the spatially detached physical relationship of the other sites with agricultural land, while having a better visibility of agricultural land at longer distances.

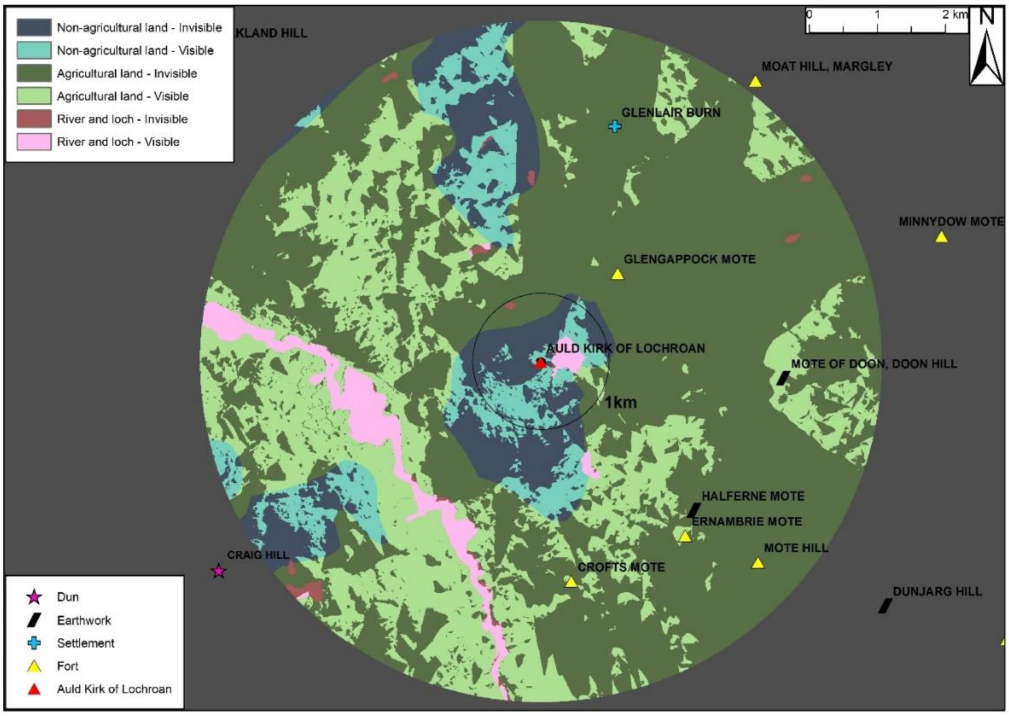

Figure 9.90: *5 km visibility of agricultural land from Auld Kirk of Lochroan, a size S site classed as a fort. The position occupied by the site has excellent visibility of Loch Roan to the south west, and the land surrounding the loch. The location is nearly 1 km from agricultural land, however.*

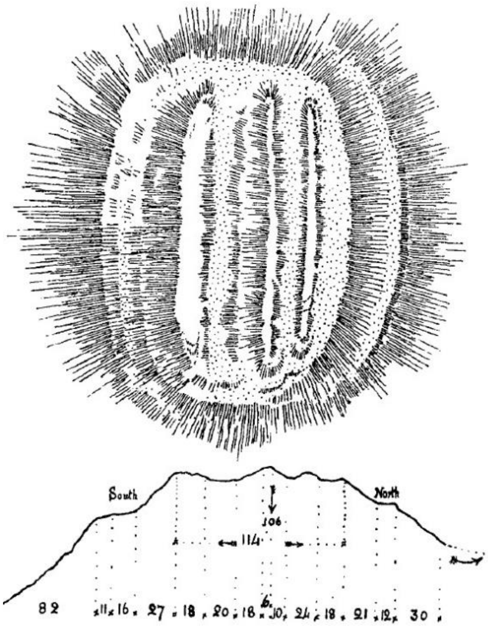

Fig. 59. Fort, Loch Roan.

Figure 9.91: *Plan of Auld Kirk of Lochroan (Coles 1892). Showing oblong/oval shape.*

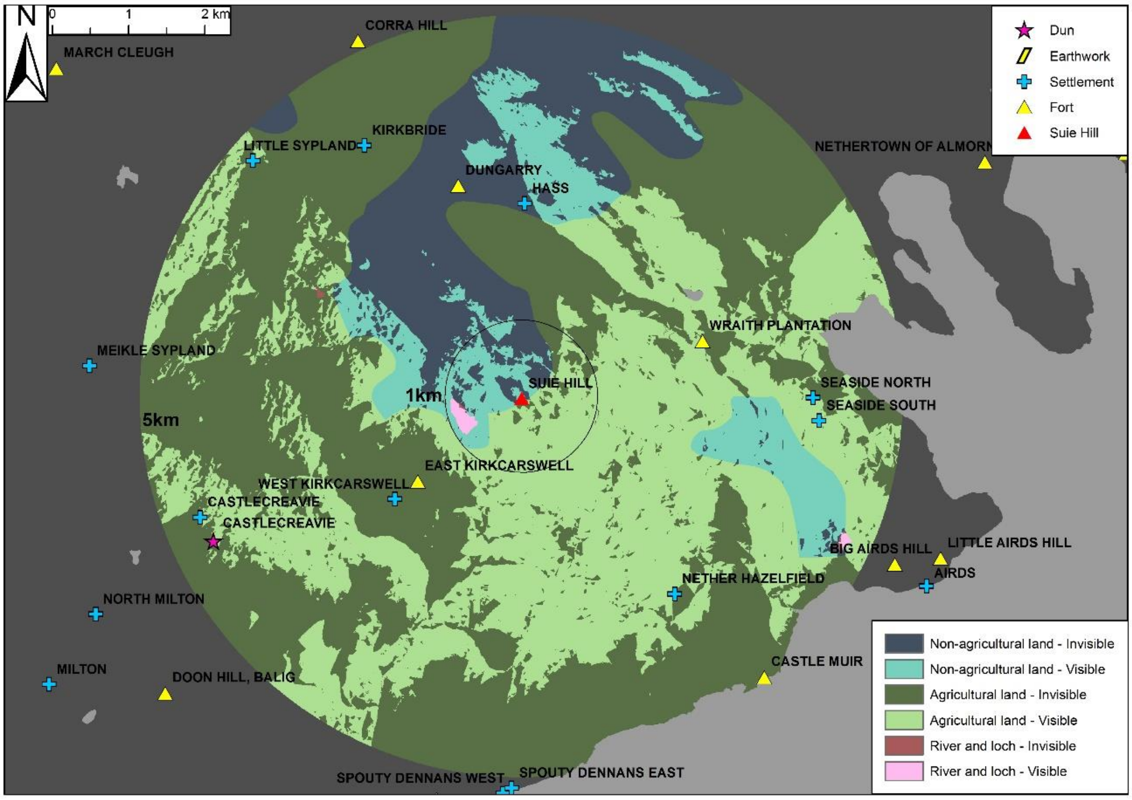

Figure 9.92: *5 km visibility of agricultural land from Suie Hill, a size S site classed as a fort. This shows excellent visibility of the landscape, particularly the wide expanses of agricultural land to the south and east.*

Figure 9.93: *Satellite image showing the proximity of Suie Hill to modern farming land.*

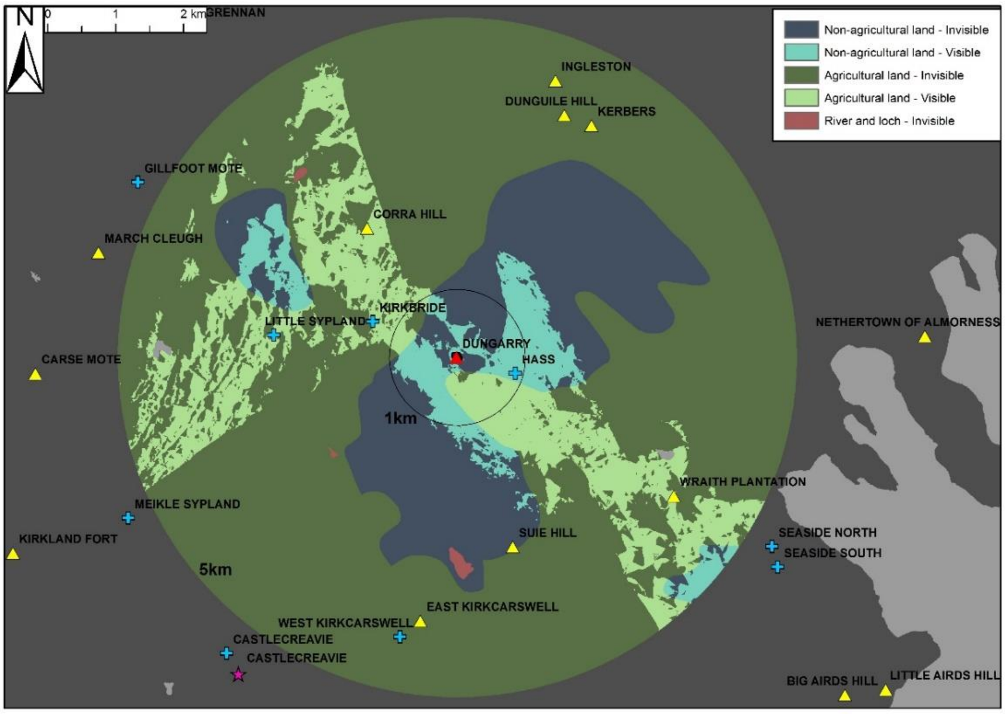

Figure 9.94: *5 km visibility of agricultural land from Dungarry, a size S site classed as a fort. Showing that the site is spatially removed from agricultural land, with a higher percentage of its 5 km viewshed made up of that land than 1 km viewshed.*

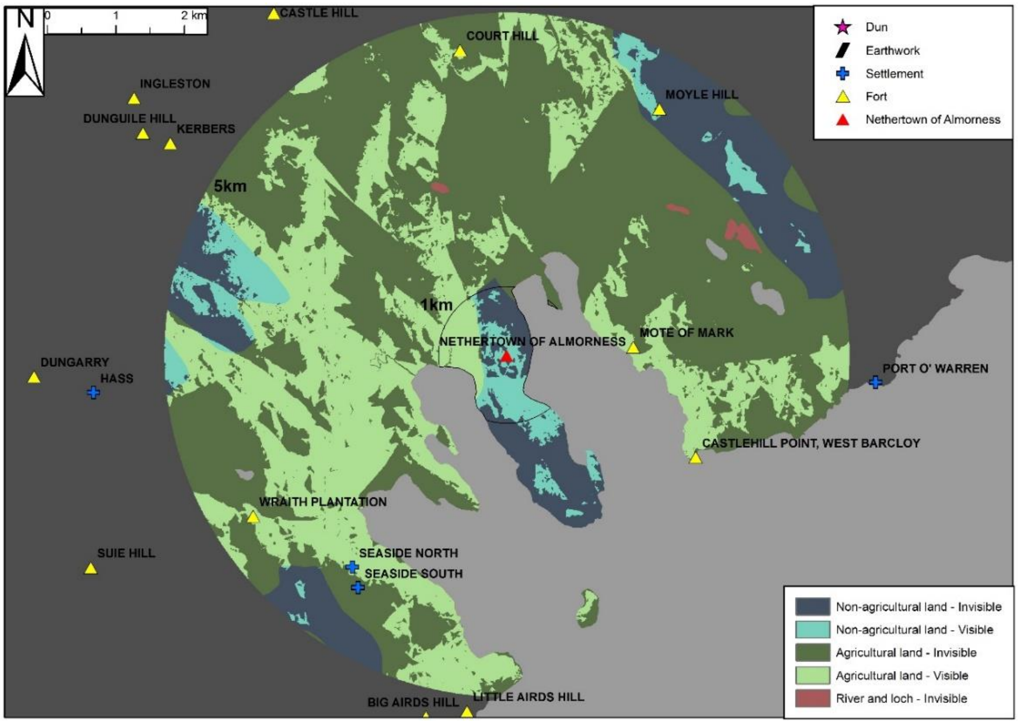

Figure 9.95: *5 km visibility of agricultural land from Nethertown of Almorness, a size R site classed as a fort. Like the previous three sites, it is located outside the margins of*

agricultural land, but its position has excellent long range visibility of that land, especially to the west.

Those sites above the step-change in area enclosed, the size T sites, vary both in their proximity to and visibility of agricultural land (e.g. Figure 9.80 & 9.96). Barr Hill, Dunguile Hill and Beacon Hill are located on 5.2 rated land, the lowest ranked land included in the definition of 'agricultural' by this author. Yet given the high altitude of all three sites and their positioning upon hills, this land is actually relatively highly-rated. All three forts have been heavily plough damaged, and medieval or post-medieval rig is visible in the interiors of Dunguile Hill (Figure 9.98) and Beacon Hill, and this is clear evidence that these locations have been considered favourable for arable farming in the past. Conversely, Moyle Hill, Giant's Dike and the Doon of Carsluith are all far from agricultural land.

The viewshed from the position occupied by Giant's Dike shows how the site is located on, and surrounded by, poorer quality land, but its vision of agricultural land beyond approximately 1 km from the fort is exceptional (Figure 9.97). It can see and be seen from agricultural land to the north, east and south. The views from its location are much wider than that of Dungarry (Figure 9.94) or Auld Kirk of Lochroan (Figure 9.90) – it has visibility of the entire landscape rather than land in a specific direction, although visibility north of the site, over what is today a region of improved pasture is particularly noteworthy. Visibility from Dunguile Hill's position is slightly narrower, directed in an arc from the south west to the north of the site (Figure 9.99). It is situated in a commanding position overlooking the valley of the River Dee around present-day Castle Douglas. Similarly prominent positions, with excellent 5 km visibility of agricultural land, are occupied by Beacon Hill, Barr Hill and Moyle Hill, and size T sites, as a group, can see amongst the largest area of that land among sites in the case study (Figure 9.96).

Coastal promontory sites in the case study area are all positioned amongst agricultural land, and their inland vision is almost exclusively made up of that land. This may support Toolis' (2003) hypothesis that many of these enclosures are essentially coastal versions of inland farming settlements, although there is very little land of poor quality along the southern coast of Kirkcudbrightshire. Even bearing this in mind, sites like the two size R promontory enclosures at Spouty Dennans may be comparable to McNaughton's Fort or Gilfoot Mote. Their limited inland vision corresponds to an expanse of agricultural land up to 1 km from the sites (e.g. Figure 9.100), like the inland size Q settlements, although, of course, they also have notable sea visibility. The formidable defences of the promontory fort at Borness Point, however, enclose a site with much poorer vision of ground immediately inland (Figure 9.101). Toolis has argued that there may be evidence for hierarchies among the promontory sites, with larger enclosures likely to be higher status settlement sites, but the landscape position of Borness Batteries suggests that it may have been something with a role that was entirely different to the smaller promontory enclosures. On the coastal edge of a knife-shaped spur of higher ground projecting towards the Solway Firth, the site's function may be more likely to be that of an overtly defensive structure or one placed for vision seaward, perhaps of the approaches to the natural harbour at Brighouse Bay just over a kilometre to the east.

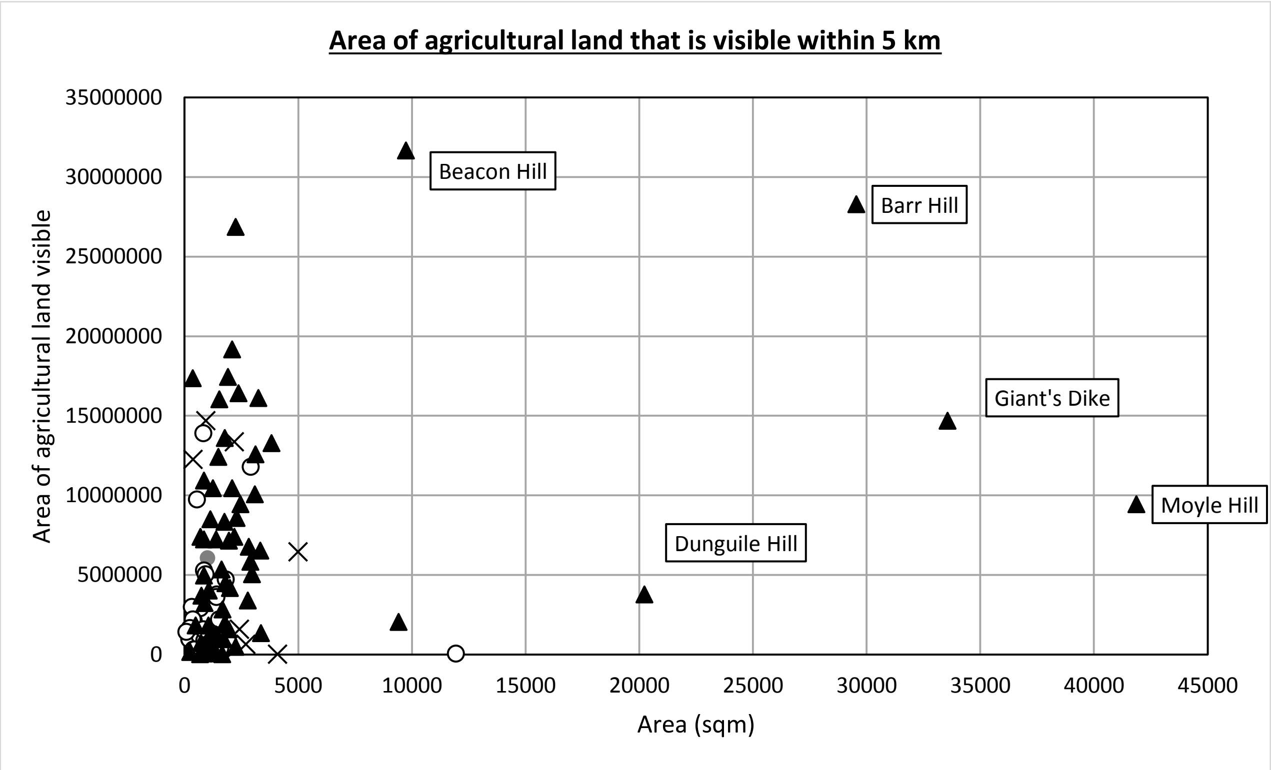

Figure 9.96: *The area of agricultural land visible from sites. Showing excellent long range visibility of agricultural land among size T sites. Most enclosed sites are impossible to distinguish in the bottom left of the graph, and Dunguile Hill, despite appearances, is actually well above average.*

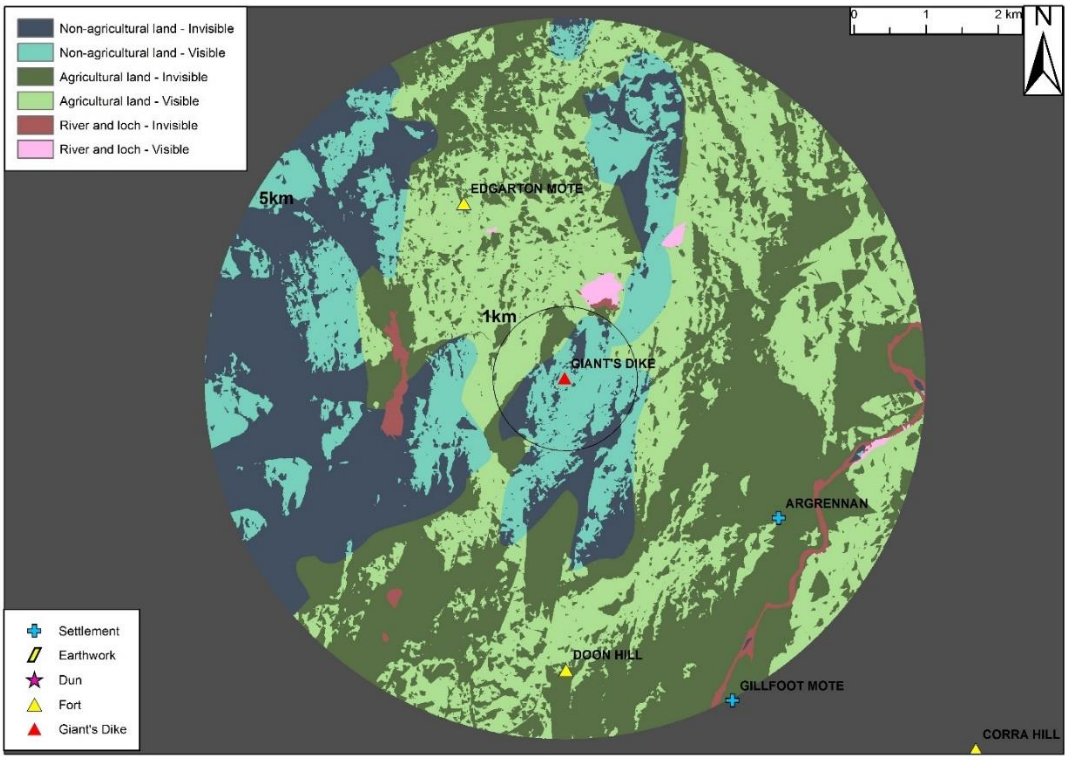

Figure 9.97: *5 km visibility of agricultural land from Giant's Dike, a size T site classed as a fort. The fort is in a sector of hilly poor quality land, but its visibility of the landscape is exceptional, and includes a huge extent of agricultural land.*

Figure 9.98: *The multivallate fort of Dunguile Hill within its landscape ©RCAHMS.*

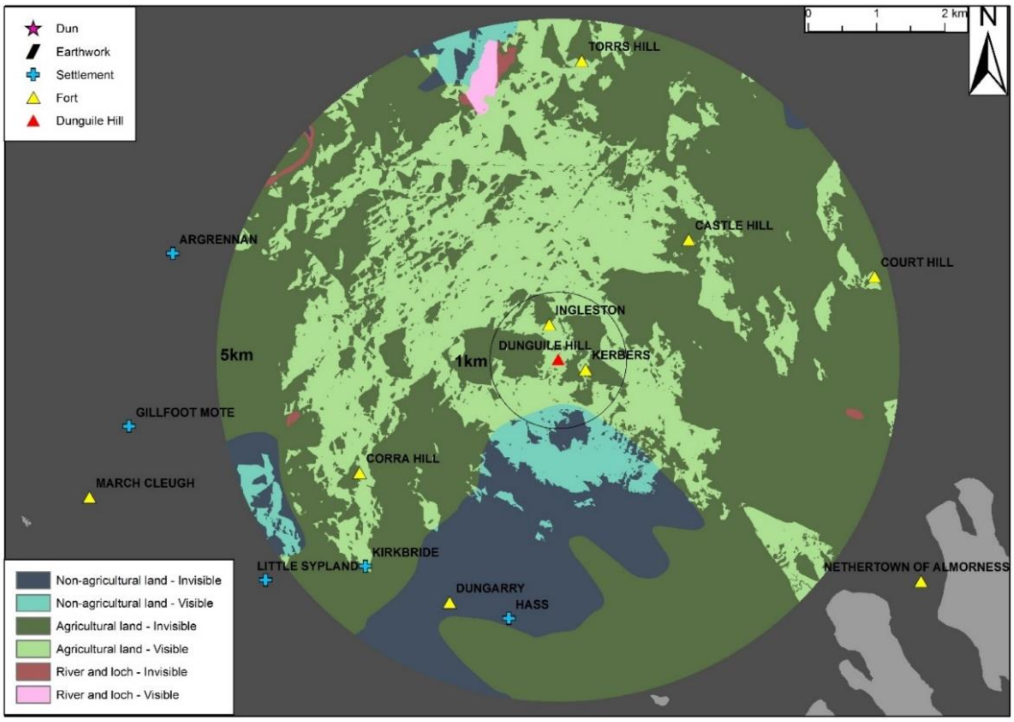

Figure 9.99: *5 km visibility of agricultural land from Dunguile Hill, a size T site classed as a fort. The position that the site occupies has extensive vistas of agricultural land to the north and west.*

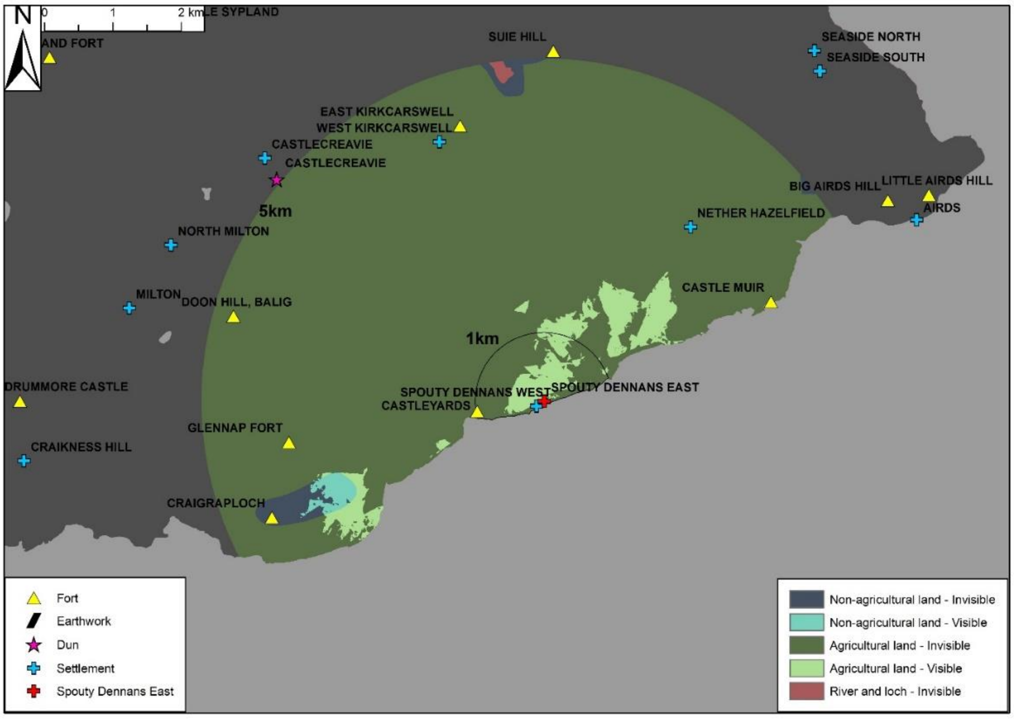

Figure 9.100: *5 km visibility of agricultural land from Spouty Dennans East, a size R coastal promontory classed as a settlement. The inland visibility of the position extends to an area of agricultural land 1-2 km from the site.*

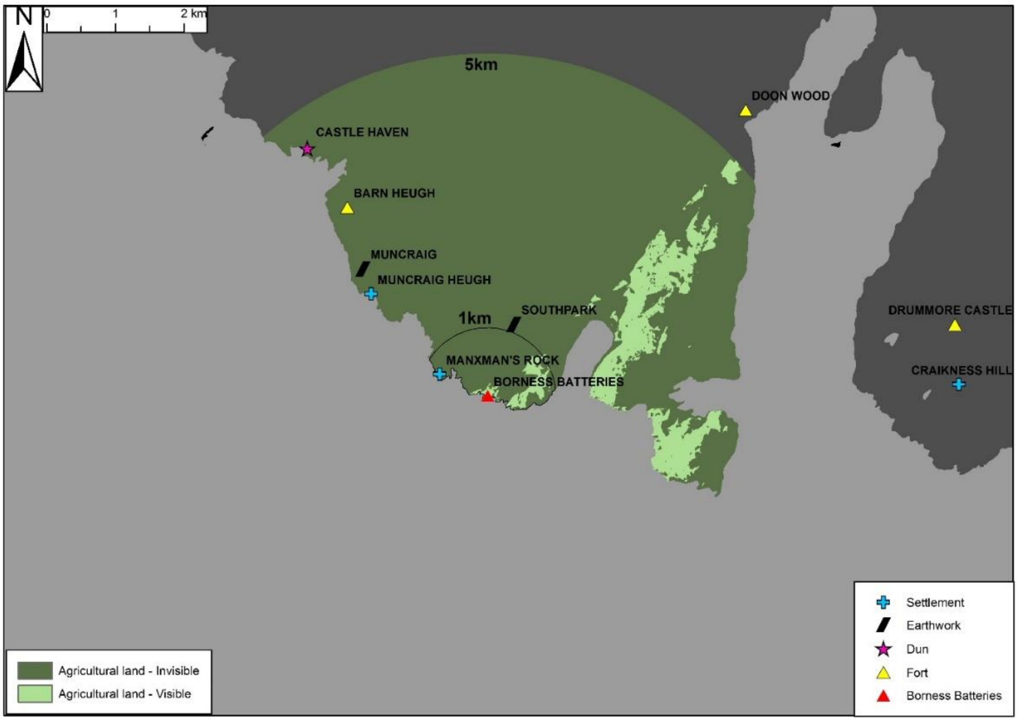

Figure 9.101: *5 km visibility of agricultural land from Borness Batteries, a size S coastal promontory classed as a fort. The site's poor visibility of ground inland, combined with its large-scale defences and defensible position may suggest that it is other than a farmstead.*

9.2.7 Visibility from the sea

The visibility of the study area from sea was calculated using a cumulative viewshed generated from 2000 randomly generated points located up to 10 km offshore. Land in Kirkcudbrightshire graded by the number of points that can see it is shown in Figure 9.102.

The number of points that can see an average pixel on land occupied by sites classed as forts was compared with that of settlements, and the two categories were shown to be nearly statistically identical (Figure 9.103). The mean visibility of sites within 600 m of the coast was also compared with a series of 50 randomly-generated coastal points, each corresponding to one 5 m by 5 m pixel. The mean value for pixels occupied by sites was shown to be more visible than the random coastal points at a statistically significant level (Figure 9.104). Coastal sites in Kirkcudbrightshire are far more conclusively visible, compared to the coastal landscape, than in the same tests carried out for enclosed sites in Kintyre and Skye (Figure 7.98 & 7.99; Figure 8.104-8.108).

Size T sites are mainly located over 5 km from the coast and, as a result, they are not especially visible from the sea (Figure 9.16 & 9.107). Using the most visible pixel enclosed by each site, Moyle Hill is quite visible and the Doon of Carsluith very visible from sea. However, the latter, despite being positioned on a large hill very near the coast, is not among the most coastally visible sites in the case study (Figure 9.107). Visibility from the site, as previously noted (Section 9.2.4; Figure 9.69), is perhaps more directed towards the agricultural land of The Machars, and more narrowly targeted on Wigtown Bay than out to sea (Figure 9.69).

The two most visible sites from sea are Big and Little Airds Hill, combining their excellent inland visibility and prominence with exceptional views across the Solway Firth, and of the natural harbours of Auchencairn Bay and Rough Firth to the east (Figures 9.108 & 9.66). The next most visible site that is not a promontory enclosure is Craigraploch, another site that also has high visibility of agricultural land inland, and excellent topographic prominence (Figure 9.30 & 9.82). A sub-circular fort, largely destroyed by comparatively recent military activity, it survives as an earthwork, and it perhaps occupies a position that would be able to observe sea travel along the Firth, and see vessels attempting to enter Kirkcudbright Bay (Figure 9.105). There are also numerous landing places close to the site, notably at Mullock Bay and White Port, suggesting that the fort could have had more of an involvement with sea travel or trade than just observation. The Mote of Mark, a site with poor visibility and topographic prominence inland, is not especially visible from the sea, compared to its distance from the coast (Figure 9.108). Vision from the site may be directly more narrowly towards Rough Firth, and the entrance into that bay (see Figure 9.112). Proximity to and visibility of a sheltered harbour may have been of more importance to its inhabitants than visibility of the wider Solway Firth. Notably, excavated evidence has indicated that the site may have been a major part of 1st millennium AD continental sea trade in South West Scotland (Laing & Longley 2006).

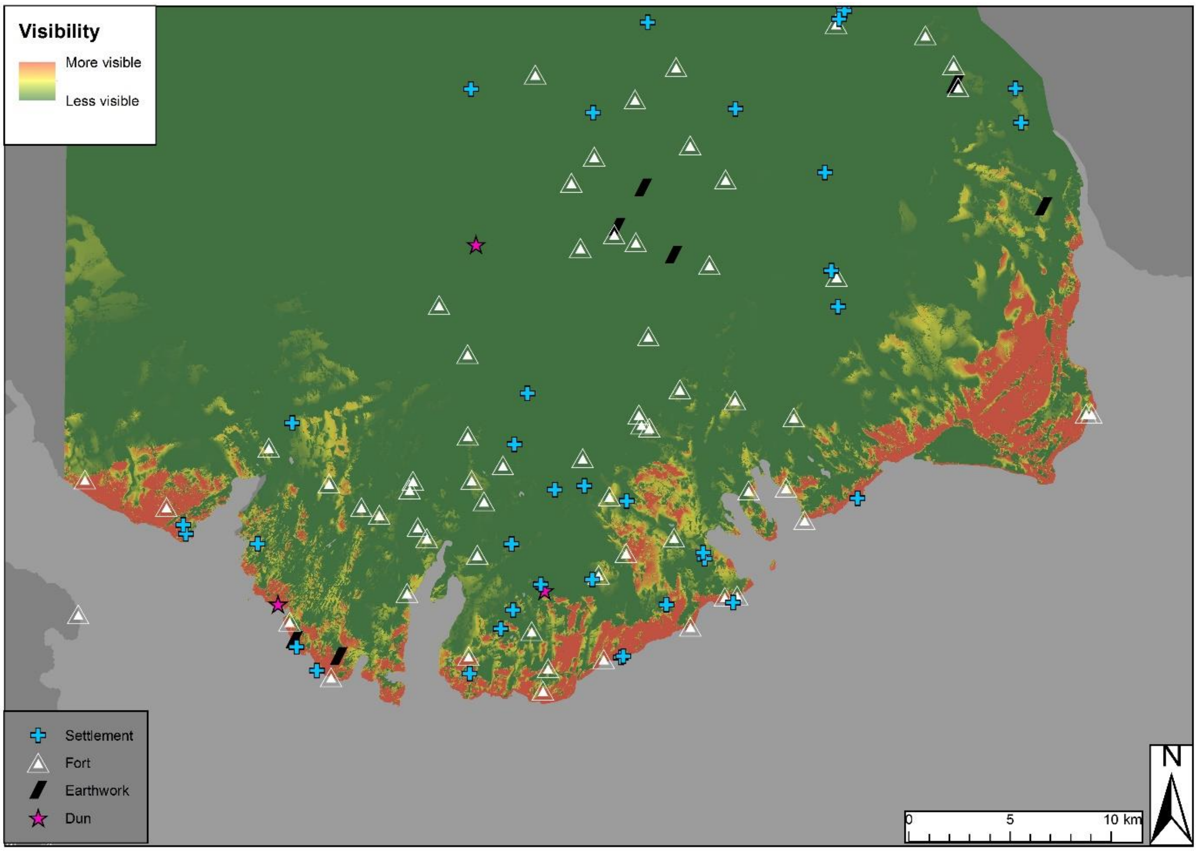

Figure 9.102: *Results of cumulative viewshed representing visibility from sea of case study area.*

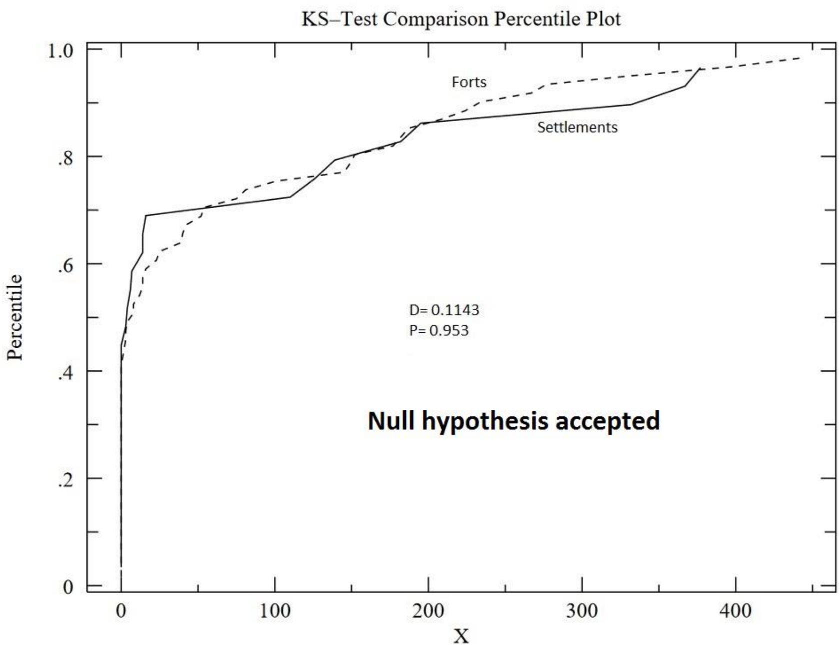

Figure 9.103: *K-S test comparing the visibility from sea of all sites classed as forts with settlements (mean visibility). The two site classes do not differ significantly.*

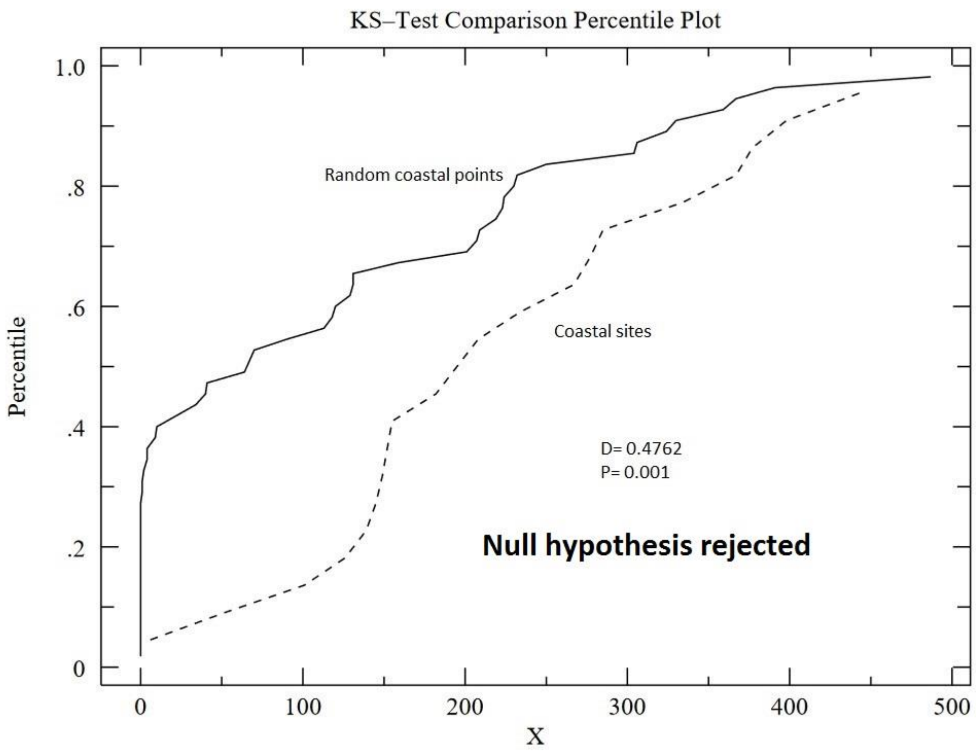

Figure 9.104: *K-S test comparing the mean visibility from sea of land occupied by sites within 600 m of the coast, with 50 randomly generated coastal points. Pixels enclosed by sites are statistically more visible.*

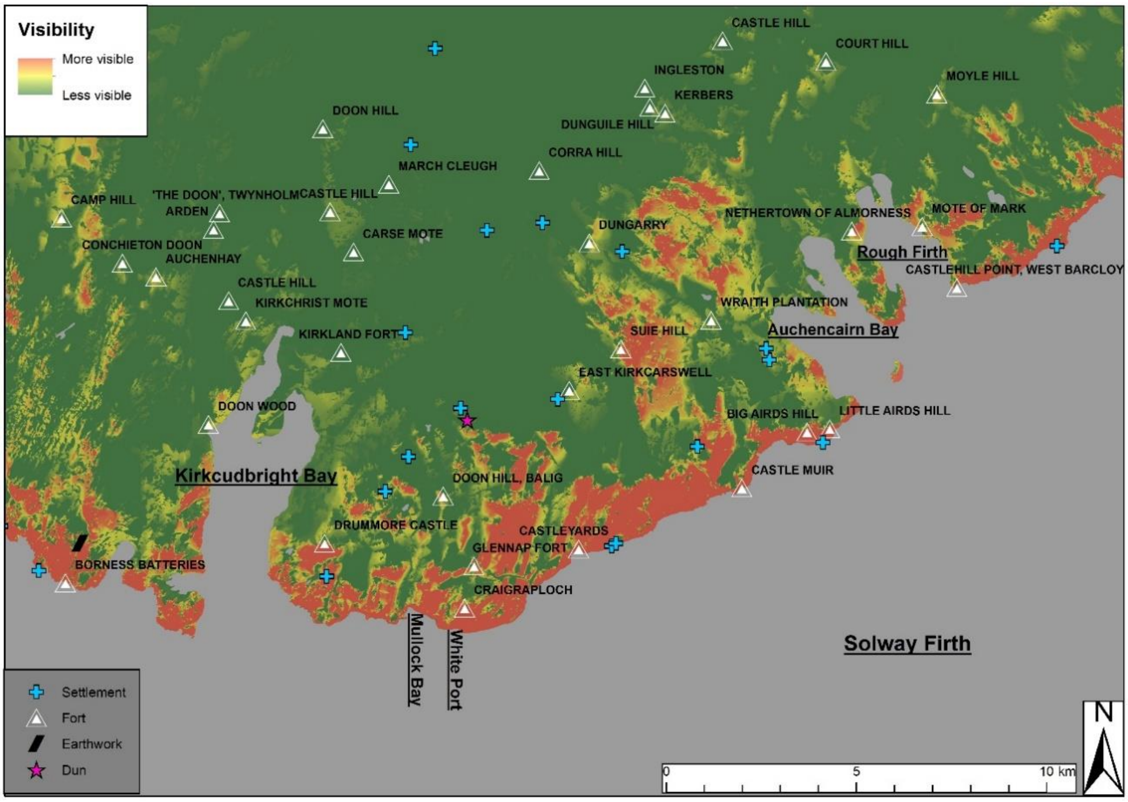

Figure 9.105: *More detailed map of coastal areas, showing visibility of land from the sea.*

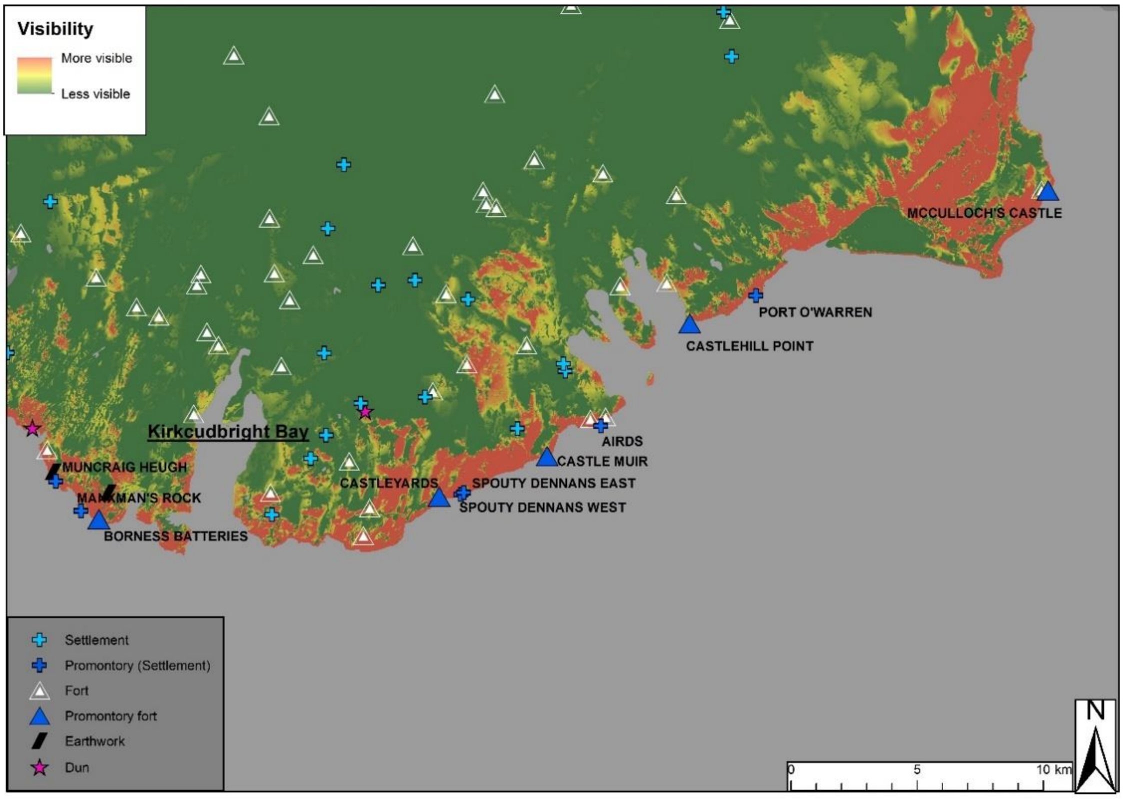

Figure 9.106: *Map showing all coastal promontory sites in the case study.*

The coastal promontory enclosures of Kirkcudbrightshire are unsurprisingly among the most visible sites from sea in the case study area (Figure 9.108). Many promontory sites are located in places that are not necessarily close to a large bay or inlet – Castle Muir, Spouty Dennans East and West, Castleyards, Borness Batteries, Manxman's Rock and Muncraig Heugh are all on stretches of coast more than 3-4 km from the entrance to one of the three large bays in the case study area (Figure 9.106). There are small beaches and much smaller bays close to most of these sites, however, and it is likely that, despite their cliff-edge positions, they were locally accessible from sea. The main exception – Castlehill Point – is in an intriguing position with exceptional visibility to and from the sea and the harbour overlooked by the Mote of Mark. Exploration of the relationship between this site and others clustered around this bay may be worth further research.

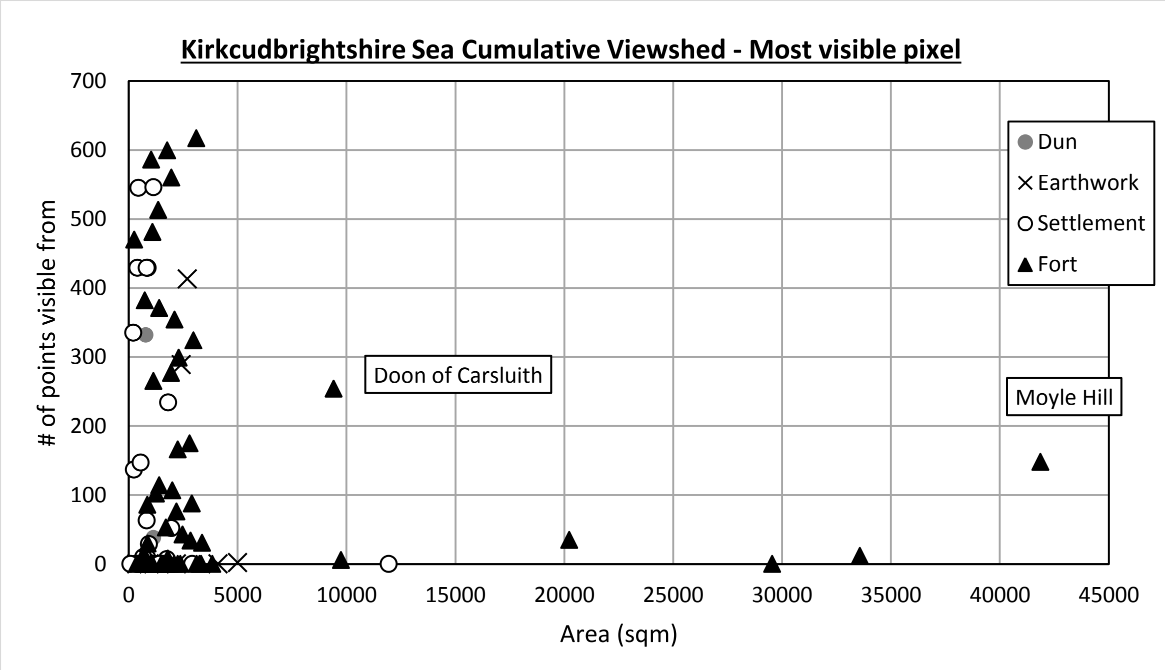

Figure 9.107: *The number of randomly-generated points that can see the site, using the most visible pixel in the interior of each enclosed site. Showing the low visibility from sea of size T sites.*

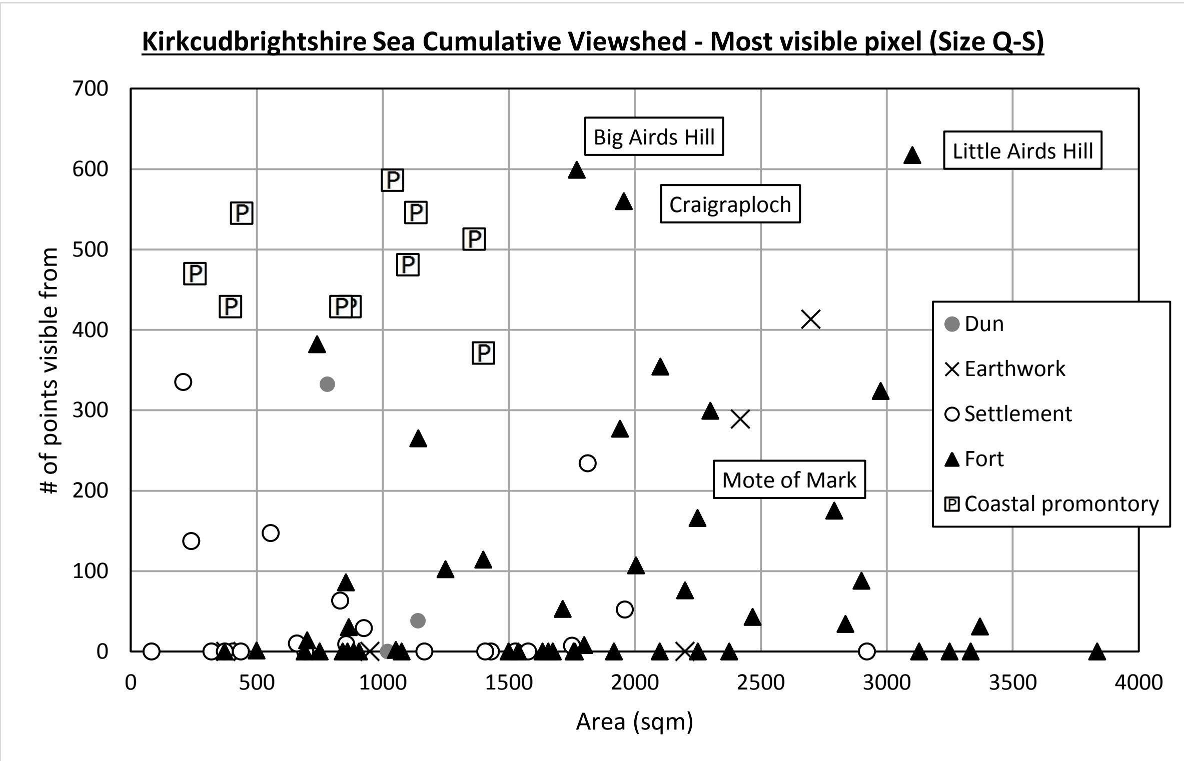

Figure 9.108: *The number of randomly-generated points that can see the site, using the most visible pixel in the interior of each enclosed site. Showing high visibility of coastal promontories, and selected other sites.*

9.2.8 Site interrelationships

Type	10 km	5 km	1 km
All sites	26.4	7.5	0.59
Settlements	26.9	7.7	0.71
Duns	27.7	7.3	0.33
Earthworks	21.4	6.7	0.71
Forts	26.8	7.5	0.53
Size Q	27.6	8.3	1.14
Size R	28	8.1	0.43
Size S	21.6	7.3	0.57
Size T	24.8	4.6	0.29

Table 9.4: *The average number of enclosed sites within 10 km, 5 km and 1 km of various categories of site.*

Type	10 km	5 km
All sites	27	41.3
Settlements	14.7	34.3
Duns	26	52.3
Earthworks	31.1	55.7
Forts	31.9	42.3
Size Q	15.9	32.7
Size R	21.7	38.9
Size S	29.8	45.4
Size T	50.4	39.2

Table 9.5: *Percentage of enclosed sites visible from various categories of site over 10 km and 5 km radii.*

Type	10 km	5 km	1 km
All sites	7	2.9	0.45
Settlements	3.8	2.3	0.46
Duns	7.3	2.7	0.33
Earthworks	7.7	4	0.57
Forts	8.3	3.1	0.43
Size Q	4	2.6	0.86

Size R	5.8	2.7	0.29
Size S	7.7	3.2	0.45
Size T	12.1	2.6	0.29

Table 9.6: *Average number of enclosed sites visible from various categories of site over 10 km, 5 km and 1 km radii.*

Table 9.4 shows the number of enclosed sites that lie within 10 km, 5 km and 1 km of each site type, measuring whether a particular category of monument tends to survive in regions of high or low site density. The most interesting statistics involve site size – size Q sites are situated in 10 km and 5 km regions with above average densities of sites, and they have on average more than one other site within a kilometre, double that of sizes R, S and T. Size S sites do not stand out as a group in terms of the number of sites within 5 km and 1 km, but have atypically few within 10 km, perhaps suggesting that the wider sectors of Kirkcudbrightshire that they are in are less populated. Size T sites are distinct, as they are for almost every GIS-based analysis in this case study. They are far more isolated, with much fewer sites within 5 km and 1 km than sizes Q, R and S sites. The statistic for 1 km really stands out, and it is worth noting that without Dunguile Hill, which has the forts of Ingleston and Kerbers directly adjacent, no enclosure of this size would have any other sites within 1 km.

This distinctiveness is also apparent on examination of the percentage and number of sites that the largest enclosures can see over 10 km and 5 km (Table 9.5 & 9.6). Over a 10 km radius, size T sites can see more than 50% of other sites, almost double the percentage of size Q, R and S sites. Yet over the shorter 5 km distance the percentage of other sites visible from the largest enclosures is actually lower than the percentage over 10 km. This is not an expected result - it is normally easier to see things that are closer rather than further away. Therefore size T enclosures have greater visibility to and from other sites at very long distances, making them different from all smaller enclosed sites. Size Q, R and S sites can see a much higher percentage of other sites over 5 km than they can over 10 km.

Furthermore, despite the largest enclosures' exceptionally high general land visibility over a 5 km radius relative to smaller sites (Figure 9.67), they can actually see a lesser percentage of other enclosed sites than size Q, R and S sites over this distance. If the percentage of land visible from the ten largest enclosures in Kirkcudbrightshire is compared using a K-S test with the percentage of sites visible, the two datasets are not conclusively different (Figure 9.109). On the other hand, the same K-S test carried out for sizes Q, R, S and T indicates that visibility of sites is conclusively greater than visibility of land at a statistically significant level (Figure 9.110). This is an expected result, as most sites are in more visible places in the landscape than an average location. They are also much larger in size than one 5 m by 5 m pixel, which is essentially what the land visibility percentage test is based on – the percentage of pixels visible in the landscape.

Therefore there should be a bias towards proportion of sites visible, over percentage of land visible, at any distance. This makes the poor visibility of sites from size T enclosures over 5 km very unusual. Not only are the larger hilltop enclosures spatially removed from other sites (Table 9.4), they are also less likely to be able to see the sites they are actually close to. An example of this distance, both spatial and visual is apparent for Moyle Hill in Figure 9.113, with few sites close to the fort, and superior visibility of sites beyond the 5 km radius.

All other categories of enclosed site have a straightforward visual relationship with their peers. Size S sites can see more sites, particularly over longer distances, than size Q and R – this fits in with size S sites better vision of the landscape. Size Q sites can see a greater number of other sites within 1 km because they have more sites close to them. Forts as a category can see a higher percentage, and quantity, of other enclosed sites than settlements can, especially over longer distances, which does not disagree with the respective RCAHMS site types' relative visibility of the wider landscape.

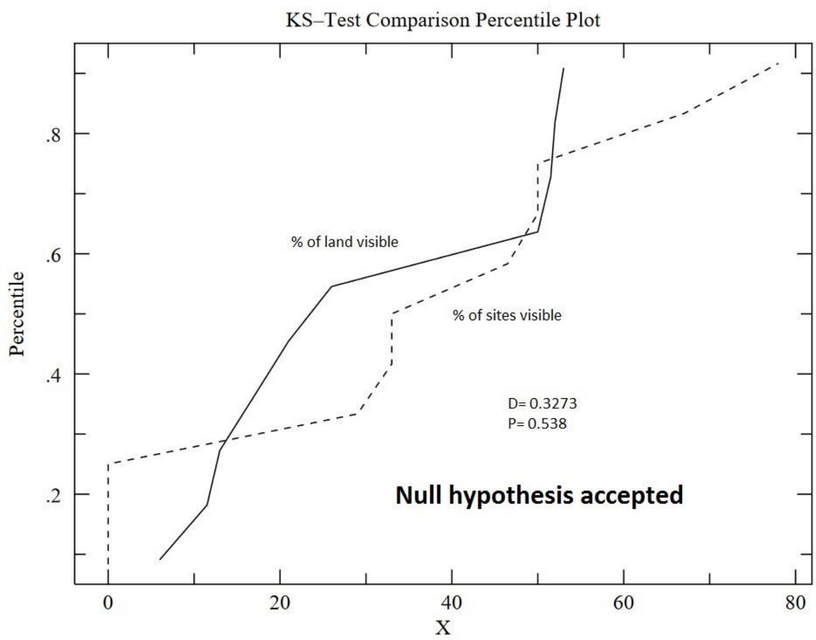

Figure 9.109: *K-S test comparing the proportion of other sites visible from size T sites with the percentage of land visible, over a 5 km radius. Size T enclosures cannot see a higher*

percentage of sites, despite sites being much more visible than an average pixel in the landscape.

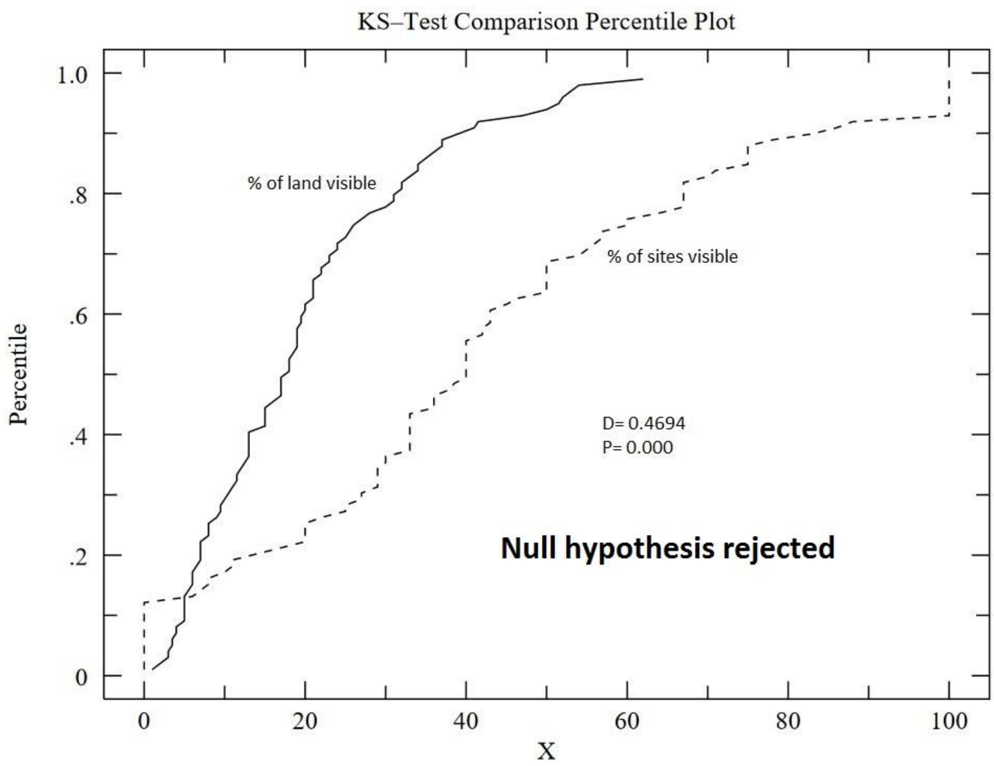

Figure 9.110: *K-S test comparing the proportion of other sites visible from size Q, R, S and T sites with the percentage of land visible, over a 5 km radius. Other sites are much more visible than the landscape.*

We lack dating information for all categories of enclosed site in Kirkcudbrightshire and, as a result, care should be taken in how the results of intervisibility analyses are interpreted. A site that we do have a comprehensive and reliable chronology for is the Mote of Mark. It is very close to average in terms of the percentage of other sites visible within 10 km and 5 km (Figure 9.111). Due to having slightly fewer sites nearby, it can see marginally less sites over 10 km and 5 km distances than average, and there is no other site within 1 km, which is certainly not unusual. Its visibility is, as previously discussed, directed towards the bay that it overlooks (Figure 9.112). Notably it is intervisible with Castlehill Point, the promontory fort that both oversees the mouth of that bay and has an excellent view of the wider Solway Firth. It has been suggested earlier in this chapter that the Mote of Mark's sea visibility is quite restricted for a high status site in a coastal location (Section 9.2.7). If the promontory enclosure at Castlehill Point was contemporary, it might perhaps act as an outer defence or a look-out point against sea-borne attacks. This might conceivably make up for the Mote of Mark's own restricted visibility, warning of danger from the sea, or observing movement in the Solway Firth. It also has vision of several prominent drystone forts (see Figure 9.112), and this may suggest contemporary occupation of at least some of those positions in the landscape. It is important to note that these forts are in very visible locations in the landscape. Deliberate placement to view another site and inadvertent intervisibilty can be impossible to distinguish.

Notably, it is not intervisible with Moyle Hill, the largest enclosed site in Kirkcudbrightshire, which is around 4 km to the north and very prominent (Figure 9.112). This fits in with the poor shorter range visibility of other sites noted as a general trend among size T enclosures. The location occupied by Moyle Hill does not have visibility of any of the sites surrounding Rough Firth (Figure 9.113), a bay which, if the Mote of Mark was an important trading post, may have been of considerable significance in the mid to late 1st millennium AD. The poor visibility of other enclosed sites from Moyle Hill may mean that there is a lesser chance that is was occupied at the same time as those sites. If it was a political centre, one might expect it to have vision of other sites within the same political system, especially given its high visibility of the general landscape. Perhaps this is a clue as to the function, or the chronology of this site, i.e. it may not be a central place among surrounding enclosed sites or it may be from a different time period to those sites.

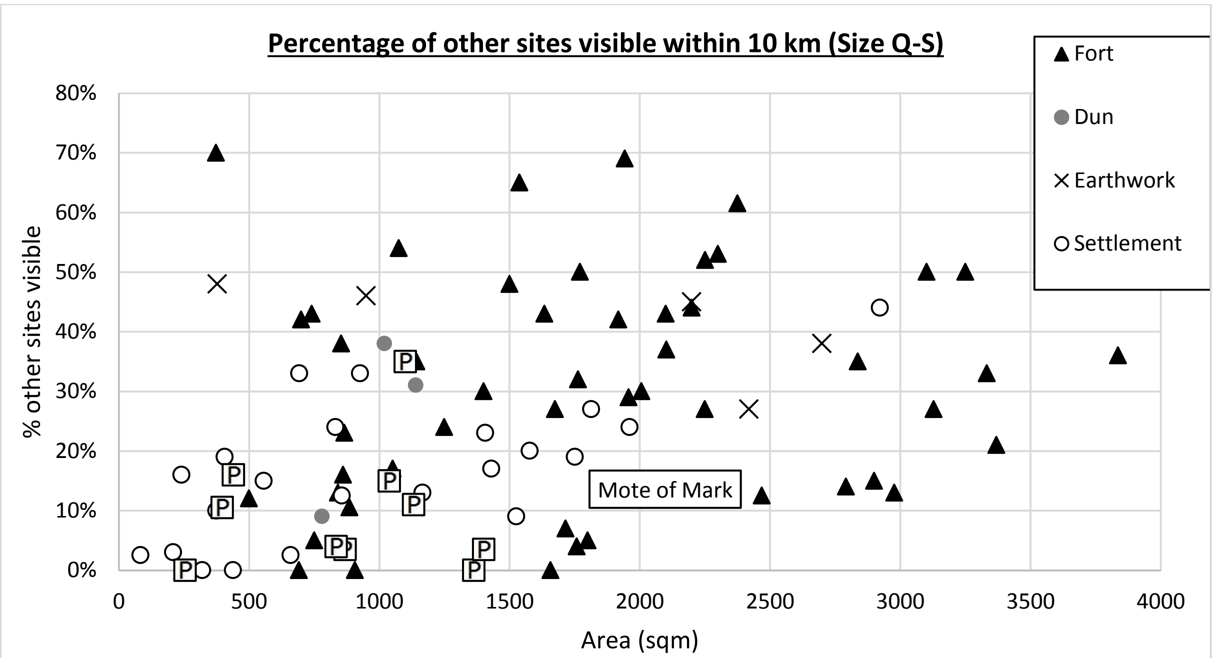

Figure 9.111: *The percentage of other sites visible within a 10 km radius.*

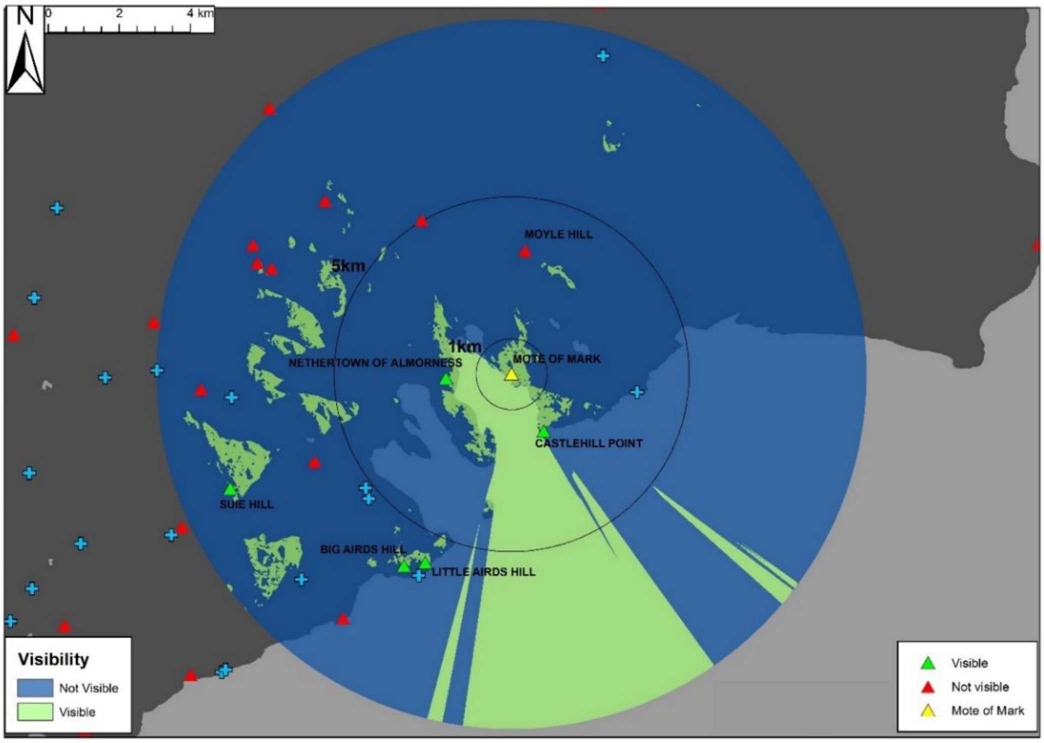

Figure 9.112: *The visibility of other sites and the landscape from the Mote of Mark, over a 10 km radius. Its vision is directed seaward, and almost all visible sites are coastal.*

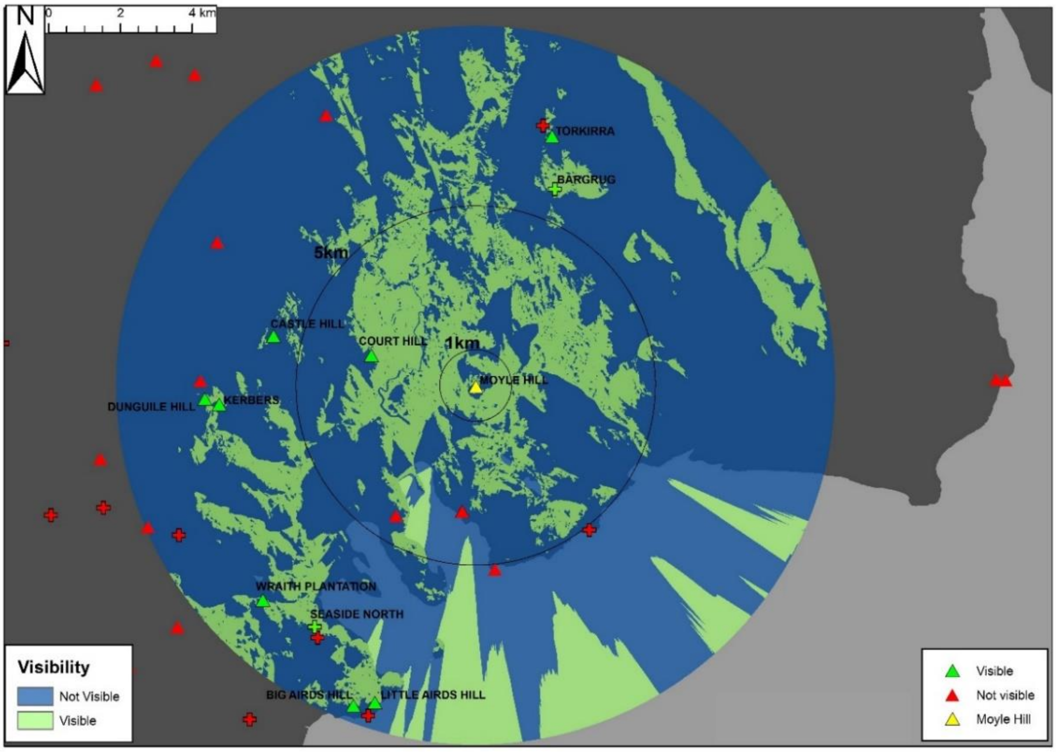

Figure 9.113: *The visibility of other sites and the landscape from Moyle Hill, over a 10 km radius. Coastal sites to the south are not visible, despite the site's generally high visibility of the landscape.*

Figure 9.114: *The landscape positions of Castlehill Point, the Mote of Mark and Nethertown of Almorness surrounding Rough Firth. The three sites are almost certainly intervisible.*

9.3 Discussion

The methodology used to assess landscape position in these case studies has focused on the characteristics of individual sites or site types, the objective being to gain a greater understanding of the reasoning behind the positioning of later prehistoric enclosures with specific traits. This approach is necessary as, as discussed in Chapter 3 enclosed sites are imperfectly categorised and poorly dated, and it is better to treat each site independently than assume connection between them that might not have existed. Yet occasionally in these case studies, a site type has clearly been distinct enough to take the interpretive process one step further in terms of connections between sites. In Skye complex Atlantic Roundhouses form an undeniably convincing grouping (Chapter 8.3), in Kirkcudbrightshire it is large hilltop enclosures.

Six hilltop sites are significantly larger than others in Kirkcudbrightshire – Moyle Hill, Dunguile Hill, Beacon Hill, Giant's Dike, Barr Hill and Doon of Carsluith. They are not especially similar in internal area, but they are relatively closer in size to each other than to the mass of smaller enclosures. Throughout this chapter these sites have been statistically different, at a significant level of confidence, in almost every landscape based analysis that has been undertaken, despite having to include a number of smaller sites with the category in K-S tests to make the grouping large enough to be statistically viable (Figure 9.24, 9.46, 9.57, 9.60, 9.61, 9.109 & 9.110). They are higher and more topographically prominent, which may be linked to their undeniably greater visibility in the landscape than smaller sites. In some cases, e.g. Beacon Hill or Giant's Dike, the location chosen was the most prominent and visible place in the region. That there is no *a priori* reason why this relationship between size and exceptional topographic and visual prominence should be the case is exemplified by Cnoc Araich in Kintyre, an enclosure of comparable size to these sites with very different landscape characteristics (Chapter 7). Instead it was a deliberate choice to locate these forts in these positions.

The reasons for this choice could have been many, and have been thoroughly covered by many in the past (e.g. Hawkes 1931; Wheeler 1943; Cunliffe 1984; Bowden & McOmish 1987; Armit 2007; Lock 2011; Chapter 2.1) – defence, control, display and ceremony, among others. The connection between size and prominence does not mean that the people living within such an enclosure were of higher status than those outside, but it may mean they were different, or considered themselves to be different. It is likely that these hilltop enclosures in Kirkcudbrightshire are, by any definition, hillforts, and share many of the same characteristics and problems in terms of determining their function and social position as Southern British, Welsh or Scottish Border hillforts.

Along with their outstanding prominence and visibility, these sites have an unusual relationship with what is considered to be better quality farming land today, and a very distant relationship, spatially and visually with other enclosed sites. They have excellent vision of farming land that is at least a couple of kilometres from the site itself, and their locations seem designed to see and to be seen from the land which may have been the centre of day-to-day subsistence activity, in terms of herding cattle or growing crops. That they are spatially removed from that land, both in distance and in relative altitude, suggests that they may not have been involved in everyday activities. This may have a number of meanings; they might not have been occupied constantly and were a place where communities came together occasionally for various reasons, or they were home to a section of society for whom it was not necessary to be routinely directly engaged in agricultural activity.

It was noted in the archaeological background section to this chapter that enclosures of this size were distributed evenly throughout the case study area. Figure 9.115 shows a 10 km viewshed taken from each of these sites, showing their distribution throughout Kirkcudbrightshire and how much their visibility overlaps. It is remarkable that, Dunguile Hill aside, none of these hilltop sites are within 10 km of each other - Beacon Hill, Barr Hill, Giant's Dike and the Doon of Carsluith are noticeably evenly spaced out. If a distribution related to overseeing the best farming land in Kirkcudbrightshire is the prime concern for these sites, there is only one inconsistency in the distribution – a gap in the south west near present-day Kirkcudbright. Several recorded enclosed sites were not included in the GIS-based analyses due to deficiencies in data, lack of accurate plans or inability to chart the extent of the site exactly on satellite imagery. One of those forts – Auchenhay – is in this locality, a ploughed-out earthwork on extremely prominent Camp Hill overlooking Kirkcudbright. It was identified by Jones in 1979 from aerial photography and described as a 'large hillfort', and measurement of the barely visible earthworks surrounding the hilltop on satellite imagery puts the size of the enclosure at more than a hectare. With the inclusion of this site there is a consistent, dispersed distribution of large, prominent forts in Kirkcudbrightshire.

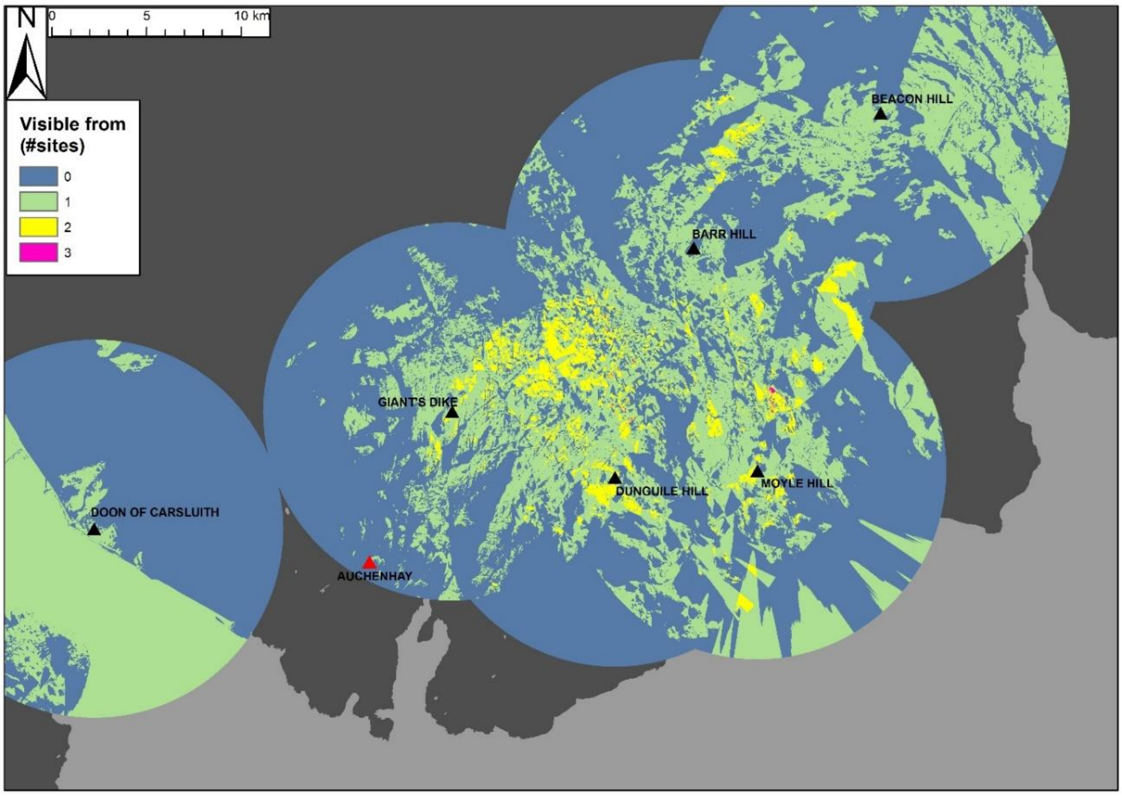

Figure 9.115: *The overlaid 10 km cumulative viewsheds of all enclosures of size T in the case study.*

Again, if Dunguile Hill is taken out of the equation, their 10 km viewsheds barely overlap. Visibility from locations occupied by these sites is directed at a distinct area of agricultural land, extending as far as 10 km from each site. The RCAHMS notably hypothesised that evidence for territories assigned to individual hillforts could be seen in the settlement record of Eastern Dumfriesshire, based on an example of the relationship between the complex fort of Castle O'er in Eskdale, and its surrounding land and sites (RCAHMS 1997, 78-83). Even the largest enclosure at Castle O'er is, however, much smaller than the innermost area enclosed by the large hilltop enclosures in Kirkcudbrightshire. Nothing like that site's dominating relationship with nearby sites like Bailiehill, Billholm or The Knowe seems to be apparent among Kirkcudbrightshire's forts, except perhaps that of Dunguile Hill and its connections with nearby Ingleston and Kerbers. Instead, it may be that the large hilltop sites in Kirkcudbrightshire are more concerned with dominating land rather than the enclosed sites that survive on the surface today.

What then are the other 94 enclosed sites in Kirkcudbrightshire? Can they be broken down or categorised beyond the broad RCAHMS classes of fort, settlement, earthwork and dun, or further than the primarily morphological recategorisation of mostly smaller sites carried out by Cowley (2000), and by Cavers (2010) for nearby Wigtownshire? In area enclosed, the remainder of sites in Kirkcudbrightshire resemble those of Kintyre and Skye, with a number of differences. Notably there are far fewer surviving enclosures that are of roofable size or surround an area that probably contained a single roundhouse in this case study area than the number of large drystone roundhouses in Kintyre or, particularly, Skye. From surviving archaeological evidence, it appears impossible for a significant proportion of the population of Kirkcudbrightshire ever to have lived in isolated enclosed roundhouses or homesteads. A contrast can be drawn with Eastern Dumfriesshire with its dense distributions of small scooped settlements surviving as earthworks in the upland river valleys of the north (RCAHMS 1997). The difficulty of identifying these settlements in the lowlands has been stressed however – the bias in distribution favouring northern Dumfriesshire may be a result of differences in preservation, with small earthworks only visible as faint cropmarks in many cases. Given the predominance of pasture in Kirkcudbrightshire today, and the resulting poor conditions for formation of cropmarks, small, single-roundhouse sized settlements, may have comprised a more significant part of the later prehistoric settlement record than they seem to today.

Going by what evidence we have, however, small stone-walled or palisaded homesteads like McNaughton's Fort, North Milton or Gilfoot Mote are very much in the minority. They are clearly positioned among agricultural land and were probably associated with a tract of that land that extended approximately a kilometre from the site (Figure 9.86 & 9.87; Table 9.2), and, because of their size, were likely to have housed no more than an extended family. There may be a contrast between the smallest examples, mainly circular, and slightly larger settlements, often closer to oval in shape, like Bargrug, Hass or Torkirra, that seem to be located in more agriculturally marginal regions, although they can likewise be associated with farming land up to 1 km from each site (Figure 9.88 & 9.89). None of these slightly larger settlements have been excavated and it is unknown whether they may have differed from the smaller examples in having a larger yard, or maybe extra roundhouses. Their role in later prehistoric society is unlikely to have varied much from the smaller homesteads, however.

Given the surviving settlement evidence, much of the population in the 1st millennium BC, and the early 1st millennium AD, may have lived in heavily defended prominent, conspicuous earthworks or drystone-walled enclosures, of sufficient size to contain many post, turf or stone-built domestic structures. Many of the sites classed as forts in Kirkcudbrightshire are likely to be fortified agricultural settlements, given their accessibility to and from farming land. This suggests that the dominant political structure in this region, for some period of time, was a dispersed pattern. Independent communities may have been emphasising their independence by the fortification and elaboration of prominent locations in the landscape, staking their claim to the more fertile regions of Kirkcudbrightshire. That multivallate enclosures tend to be larger, higher and more prominent (Figure 9.26 & 9.34**)** suggests that there may have been a degree of hierarchy between these sites, or an attempt by some groups to project an appearance of higher status or power. The chronological relationship between the majority of these heavily fortified settlements and the large hilltop sites or hillforts is clearly of vital importance in the validation or otherwise of this hypothesis. One supposition might be that the large hilltop enclosures were temporarily occupied sites where entire communities came together from time to time – such meeting places would be arguably required for wider societies that may have been dispersed into isolated communities to function (e.g. J. D. Hill 1995).

Another possibility may be that the large hilltop enclosures date to the first half of the 1st millennium BC and the smaller fortified settlements the late 1st millennium BC/early 1st millennium AD, meaning that there would have been a fundamental change in political structures at some point in later prehistory. Thus there may be more than one social system present in the upstanding prehistoric settlement evidence from Kirkcudbrightshire. If the large number and variety of sites in the region represents several different political systems, separated chronologically, a consequence may have been that patterns in site size, visibility and prominence were obscured (e.g. section 9.2.4). For example, if a differentiated settlement record based on a few 0.3 ha prominent enclosures and many enclosures below 0.1 ha in size was replaced by a system with only independent enclosed settlements around 0.2 ha in area, and archaeologists could not differentiate typologically between the two systems, it would appear in the archaeological record as a mass of undifferentiated data. It is possible then that masses of data among which few patterns are apparent, e.g. the visibility analyses (section 9.2.4), may be reflective of political change in the prehistoric settlement record.

To this settlement picture must be added the unknown number of crannogs in the region – twelve are listed by the RCAHMS, but the quantity of identified crannogs in the region, as elsewhere in Scotland, is probably a tiny fraction of that which originally existed (Cavers 2010, 27-8). Those that are present in the archaeological record have an easterly distribution within the study area, however it is likely that this represents patterns of survival and lack of intensive survey elsewhere in Kirkcudbrightshire. Along with an unenclosed settlement record of unknown quantity and uncertain distribution, they probably represent a large, invisible, portion of the settlement record in the region.

Only two sizes of enclosed site occur above the 200 m contour in Kirkcubrightshire – the large hilltop enclosures over 9000 m^2, and drystone sites enclosing a distinct area of between 1500 m^2 and 2100 m^2. These smaller drystone enclosures have certain shared morphological characteristics – they are mostly oval or oblong, and often have external enclosures or multivallation. The precipitous nature of their locations and their physical, if not perceptual, removal from better farming land suggests that access to and from that land was not a priority for their builders or occupiers. Defence may have played a major role in the conception of these sites, perhaps aligned with functions as political centres, with control both practical and psychological over the people that farmed the surrounding localities. In that sense, they may have much in common with Trusty's Hill and the Mote of Mark. Trusty's Hill is not as high in altitude as sites like Suie Hill or Auld Kirk of Lochroan, but it is of roughly similar size, shape and construction and also has associated external enclosures, and is quite prominent within its local area. The Mote of Mark is also comparable in size, shape and construction, although its topographic prominence and visibility of the landscape are poor.

This author believes it is likely that Dungarry, Suie Hill, Auld Kirk of Lochroan, possibly Mochrum Fell and conceivably Little Airds Hill may have been similar in conception, if not necesarily in importance, to each other – sites that may have fulfilled an expanded role which was not merely that of a place for farming communities to live and work and to be safe while they did so. Due to their defensibility and physical removal from the fertile lowlands it is conceivable that they may have enclosed something that was of significant value to a wider community, or served as a refuge or as a symbol of social power.

There are more among the multiplicity of fortified sites around 2000 m^2 in size, such as Drummore Castle, Court Hill or Nethertown of Almorness, that share some of these landscape and morphological characteristics, and may belong to this grouping. Along with the Mote of Mark and Trusty's Hill another analogous site might be the inner enclosure at Castle O'er – equivalent in shape, size, construction and position in the landscape, and radiocarbon dated to the first half of the 1st millennium AD. These sites may represent a period of increased centralisation of society, a time when there was a social class above, or different from, members of segmentary farming communities. Alternatively, they may be evidence for a time of increased violence, when social groups prioritised practical defence over convenience, or when a refuge was needed to protect members of a community from attack. Increased knowledge of relative site chronologies is required before interpretation of settlement patterns or political structures involving these sites can conceivably go any further.

Categorisation of enclosed sites in Kirkcudbrightshire is complicated by the multiplicity of architectural types and site locations, and the large number of sites. Analysing these sites in their landscape context has added another layer of data to the information used in present site classifications. The following is a minor restructuring of the present categorisation which, this author believes, better reflects probable site roles. Due to the complexity of the record, there are some sites that do not fit easily into any of the categories.

- Homesteads. Small enclosures likely to have contained one or two structures and possibly a yard. Not normally prominent, they are visually or spatially associated with small parcels of agricultural land. They are Size Q and size R in this case study, and almost all classed as settlements.
- Defended or fortified agricultural settlements. The majority of enclosed sites in Kirkcudbrightshire, these are often locally prominent and can have large-scale

defences. The bigger, more prominent examples are more likely to be multivallate, perhaps suggesting competition or hierarchy between agricultural communities. They tend to be situated among wide tracts of fertile farming land, and likely to have served as a permanent home for a clan or group of families. They are size R or S in this case study. Most are classed as forts, but some are categorised as settlements.

- Prominent drystone upland enclosures, or forts. A series of drystone sites of fairly uniform size (~2000 m^2) that are characterised by their prominence. They are often oval or oblong in shape imposing that shape upon the hilltop they are situated on, and can have associated lower enclosures outside the inner defences. Many are far from agricultural land, both in terms of distance and the physical effort required to constantly climb the topographically prominent steep hills on which they are placed, and as a result may not be practically located as a base for day-to-day agricultural activity. Distinguishing between these sites and the fortified settlements is challenging, but this distinction may represent the difference between a site that was primarily for farming communities to live in and one that prioritised defence, prestige or ritual, i.e. a farmstead and a 'not farmstead'.
- Coastal promontory enclosures. Likely to be coastal manifestations of homesteads and fortified agricultural settlements, using sheer sea cliffs to increase the defensibility of sites. A few examples – Borness Batteries and Castlehill Point – may have had other roles, for example refuges or lookout points, that may have been integral in coastal travel, trade or defence. They vary in area enclosed with some in size classes Q, R and S.
- Large hilltop enclosures, or hillforts. Distinct in size and landscape location, these are Galloway versions of Southern British or larger Scottish Border or East Lothian hillforts, with similar questions as to their societal role.

10. Conclusion

10.1 Introduction

The main aim of this research was to identify sites with hillfort-like characteristics among the likely later prehistoric enclosed sites of western Scotland. The methodology employed was designed to transcend difficulties arising from current classificatory systems in order to recognise and locate those sites that were less likely to be primarily farmsteads, and that potentially may have additional functions. A major part of this research has been the use of GIS in an innovative way, rating archaeological sites based on the characteristics of their surroundings, and statistically testing the results. This has allowed a critique of classificatory systems from a landscape archaeology perspective and has highlighted specific groups of enclosed sites with shared characteristics; classes of enclosure whose landscape position, size and architecture suggests they are not merely farmsteads, have been recognised in the case studies of Skye, Kintyre and Kirkcudbrightshire.

A step-change in the internal area of enclosed sites has been observed, calling into question the continuum in terms of enclosed size noted by previous researchers (e.g. SCARF 2012, 74; 87). This step-change is particularly apparent in inland parts of western Scotland, and is less discernible further north and west in the overall study area. It is apparent, however, that in the study area as a whole, the only sites that lie between 0.5 ha and 0.9 ha in size are almost exclusively coastal promontory enclosures, a group for which it is exceptionally difficult to accurately calculate original enclosed area (see Chapter 5.3). This differentiation in internal area may extend to the Inner and Outer Hebridean islands, with very large promontory forts, such as those recognised on Islay and Lewis constituting an unknown, but possibly significant part of the Hebridean settlement record.

The case studies have allowed the settlement record of three diverse regions of western Scotland to be explored, including two areas whose Iron Age settlement record has been considered 'Atlantic' in character, and one which is traditionally grouped with the Ayrshire, Renfrewshire or the Borders in this regard (e.g. Piggott 1966; Harding 2004a). Fundamental differences have been detected in the landscape position of sites of various size ranges in the areas covered by different case studies. Certain classes of enclosed site have been shown to have an intimate relationship with more fertile land, while others are further removed spatially from such land, with implications for the ease of access to particular resources. In some regions, notably the Kirkcudbrightshire and Kintyre case studies, there is a positive relationship between size of area enclosed and topographic prominence, while for Skye this is not the case. The patterns observed have allowed an educated exploration of the nature of the settlement record of these areas, identifying those sites whose size, architecture and landscape position suggests that their original role was as agricultural settlements, and those for which this function on its own is less likely to be justifiable.

10.2 A critical review of the case study methodology

The GIS-based approach used in this thesis has enabled the relationships between large numbers of enclosed sites and their environments to be explored with a degree of accuracy and consistency across a substantial set of examples that has not previously been possible. While most landscape-based research into monuments in Scotland has used distribution maps, the incorporation of a third dimension, height, into these analyses, is ground-breaking in that it allows for a more authentic simulation of the landscapes inhabited by sites, and the experiences of their occupants.

The methodology used to explore landscape position in the case study chapters utilises data of a quality that has not been available in Britain until very recently. The extremely accurate Ordnance Survey Terrain 5 Digital Terrain Model that is the basis of all GIS-based analyses in this thesis only became available to the general public in 2013. Similarly, the processor speeds required to carry out spatial analyses of extensive geographical areas using a 5 m resolution raster, quickly enough to practicably process such a large volume of data, have only become affordable in recent years. This is then the very first period in time when a GIS-based project like this could be attempted, particularly at such a macro scale. Until Lidar coverage improves greatly and becomes freely available in Scotland, the quality of data underpinning the landscape analyses in this thesis is unlikely to be superseded.

The high resolution of the DTM has allowed a nuanced approach to calculating the visibility of sites in the landscape to be developed. Utilising digitised and georeferenced archaeological surveys to plot the extent of enclosed sites on such a high quality DTM enables the size and extent of, for example, a one-hectare fort to be plotted, and its visibility to and from the surrounding landscape to be calculated. It also incorporates the work of archaeologists in the field into the analyses, and, due to the employment of plans drawn in the field, allows the expertise of site investigators to be used (see Chapter 6.2.1). Instead of one pixel representing a site, as in many archaeological viewshed analyses, enclosed sites are represented by many, and so academically rigorous statistical comparisons have been made between the visibility of the footprint of sites and that of the general landscape.

The incorporation of Land Capability for Agriculture mapping into GIS based analyses was, I believe, at least technically successful. The visual and spatial relationships between sites and agricultural land could be explored and data obtained which allowed statistical comparison between classes of enclosed site. This has enabled macro level exploration of the geographical and perceptual connections between sites and parts of the landscape that may have been of value to their inhabitants. The main weakness of this approach lies in the potentially limited ability for modern land assessments, underpinned by present-day farming techniques, to be a true representation of prehistoric conditions. The division between agricultural and non-agricultural land used in this thesis is one that is informed by archaeological evidence – i.e. the distribution of relict agricultural activity – but it is a heuristic device to enable this approach to be pursued and makes no pretence at absolute precision in its representation of the Iron Age landscape or of prehistoric activities..

This is a method that treats archaeological sites as independent entities in the landscape, an approach that, it can be argued, may be imperfect from a landscape archaeology perspective. The builders and occupiers of these structures were not doing so in pristine, unpopulated landscapes. The decisions they made as to the selection of site position were influenced by the character of their environment, and a major influence would have been the existence of other enclosed sites in the vicinity. However, given the lack of reliable dating for the sites in these case studies, which may overall span a period of perhaps a millennium and a half, it is better to treat each enclosed site independently than base analyses on assumed chronological connections that may have never existed. Rating the relationships between sites and their landscapes in the way that has been carried out in these case studies, is most useful as an approach in regions characterised by undifferentiated, poorly classified, undated monuments.

10.3 Finding hillforts in western Scotland

Sites above the step-change in area noted in Chapter 5 are also distinct in their choice of landscape position compared with smaller enclosed sites throughout western Scotland. In Kirkcudbrightshire a series of comparatively large hilltop enclosures can be identified, that are spread evenly across the region, and that are more topographically prominent and more visible than almost all the smaller structures within that landscape. Their relationships with these smaller sites are also intriguing, with unusually low intervisibility between the largest enclosures and all others. They are located on prominent hills on the margins of the best farming land in the region, and the positions that they occupy almost invariably have exceptional views of that agricultural land, but at a distance. Comparable sites are present in Wigtownshire and Mid Argyll, with Cairn Pat, Knock Fell and Creag a'Chapuill similarly located in upland areas close to, and with great vision of, areas of the best farming land in western Scotland. Cnoc Araich in Kintyre does not fit this pattern, in terms of its prominence at least. It is, however, like the others, close to one of the most fertile sectors within western Scotland, and it therefore appears that conclusive evidence exists that these large, inland enclosures only occur in regions within western Scotland where there are substantial tracts of better farming land close at hand. This association is not of course directly proof that enclosures above the step-change in internal area were intimately involved in the agricultural cycle, however, but merely that they occur in regions capable of sustaining a larger population, assuming access to the resources of the better land within their vicinities. Given the standards set out in the introduction to this thesis, these sites fit the definition of a hillfort. Interpretations of their function or political role within later prehistoric societies can then draw upon the history of debate surrounding hillforts in Britain as a whole (Chapter 2). Equally it is possible that were occupied at an entirely different date from most of the smaller enclosures that are known across western Scotland, as excavated evidence has shown may be the case for several relatively large hilltop forts elsewhere in Scotland (Chapter 3.3).

Yet among the continuum of smaller enclosed sites in western Scotland, there are many that undoubtedly had functions beyond that of a farmstead. At the smaller end of the size spectrum are sites that almost certainly are solely related to the farming cycle, however. Curvilinear drystone structures of roofable size, variously classed by different authors as brochs, duns, dun-houses or Atlantic Roundhouses (Chapter 3.4), are present in Skye and Kintyre and form a definable grouping in terms of their landscape position. They are not especially topographically prominent in these landscapes and, in Skye and Kintyre, they are associated spatially and visually with local parcels of favourable land. Similarly, in Kirkcudbrightshire, sites classed as homesteads form a distinct grouping in terms of their size and prominence, and can be associated with areas of better quality land extending a maximum of two kilometres from themselves. Evenly spaced inland scatters of monumental roundhouses occur in Lorn and in the north west of Mull, only in areas of relatively high quality land. No evidence has been found that these are anything other than farms, yet the association of examples that have outworks with topographic prominence and altitude on Skye may suggest social differentiation even among otherwise similar sites. Also on Skye, there does appear to be a distinction between the landscape position of the broch and duns classes, with duns unusually intervisible with larger enclosures classed as forts, while brochs have exceptionally poor visibility of and from the same sites.

There is a real difference between these farmsteads and the enclosures slightly larger than them in area in Kintyre and Skye. The latter can be shown to be consistently located in agriculturally marginal areas, and in regions less populated by later prehistoric enclosed sites. There is no suggestion that these sites of intermediate extent are hillforts, as defined in Chapter 1, but they may represent occasionally or temporarily inhabited places, perhaps providing evidence for later prehistoric transhumance (Chapter 7.3 & 8.3). Evidence from Carghidown Castle in Wigtownshire, interpreted by the excavator as temporarily occupied and a possible refuge, may support this assertion (Toolis 2007). Similarly, it has been hypothesised that irregularly shaped walled islets of this approximate size in the Western Isles were possibly temporary settlements (Armit 1992, 110-2). A recurring theme among enclosures of this size is the use of the natural topography to minimise the artificial walling required to make a site defensible, and many examples that possess the shared traits of this grouping are promontory enclosures. If these sites, placed literally at the margins, were absent from the archaeological record there would be a much clearer size division between Atlantic Roundhouse sized structures in Kintyre and Skye, and enclosures greater than approximately 0.06 ha in area. Thus, what may be apparent in more heavily populated parts of Skye and Kintyre is a differentiated settlement record of farmsteads and much larger enclosures, with sites of intermediate size confined to outlying areas and perhaps in locations not likely to have been permanently occupied.

Most of the larger enclosed sites in western Scotland lie between 0.06 ha and 0.4 ha in internal area and, depending on the region, they have variously been classed by investigators as forts, settlements and duns. Many are primarily agricultural settlements in nature, but it has been possible to identify groupings of sites in all three case studies for which this may not be the case. Examples above 0.13 ha in Kintyre and 0.12 ha on Skye can be shown to be distinctively different in their topographically prominence and landscape visibility than those smaller than those respective sizes. In Kintyre forts between 0.13 ha and 0.35 ha in internal area share some of the landscape characteristics of the largest hilltop sites above 0.9 ha in Kirkcudbrightshire. They are located on some of the most prominent hilltops in the region and are set a little distance away from an extent of the highest quality farming land in western Scotland. Their locations are exceptionally visible in the landscape, and have excellent long distance views of agricultural land. In Kirkcudbrightshire there is a series of similarly sized hilltop forts of comparable construction – sites like Suie Hill and Auld Kirk of Lochroan - that have a lot in common with Kintyre examples like Ranachan Hill and Knock Scalbart in both their morphology and their (defensive) architecture. Notably, the Kirkcudbrightshire sites are located at the same altitudes as those of Kintyre and are in similar positions vis-à-vis agricultural land, although they are more difficult to differentiate from the mass of other enclosed sites in their surrounding area. On Skye, enclosures of this size are distinct from smaller examples in their topographic prominence, but they are closer to fertile areas and views from their positions are more local in character.

It is possible that these are sites that share some of the characteristics, and accordingly the functions, of hillforts. The hilltop enclosures in Kintyre and Kirkcudbrightshire in particular are not situated in locations that allow easy access to and from land that was farmed to provide sustenance for the local population. It is therefore difficult to make a case for them as just farmsteads – they may have combined many other roles with that of a farming settlement. Perhaps the excavations of Trusty's Hill and the Mote of Mark, the only extensive, modern such investigations of drystone enclosures falling into this size range may provide a clue as to the range of possible functions that these sites may have had (Chapter 3.3; Chapter 9.1.2; Laing & Longley 2006; Toolis & Bowles 2013). Each individual site may have performed these roles to lesser or greater degrees, for example those on Skye, being closer to farming land, may have been more intimately involved with the agricultural process – an analogous site in Argyll might be Duntroon, which is similarly located to those on Skye and which produced a large assemblage of querns associated with agricultural processing. For upland hilltop examples, defence, the projection of political power or ceremonial functions may have been more important. In Kirkcudbrightshire it is harder to satisfactorily identify those examples with more 'hillfort-like' qualities, and most enclosures between approximately 0.1 ha and 0.4 ha may have performed various roles beyond that of a farmstead at some level. Less prominent sites like Wraith Plantation or those located amongst fertile land, such as Torrs Hill, may have been primarily agricultural settlements and fulfilled other functions to a lesser extent.

10.4 The case studies and regionalism in Scottish later prehistory

Each case study has been unique in terms of the size and placement of its surviving later prehistoric enclosed settlements. Yet there are characteristics shared by at least two, and in some cases all three of the regions that suggest marked similarities between the settlement records of various parts of western Scotland. It is evident that these shared attributes straddle the boundary of what has traditionally been defined as Atlantic Scotland.

Small curvilinear drystone structures of roofable size are present in Skye and Kintyre, but not in Kirkcudbrightshire. However, in all three case studies there is a distinctive grouping of smaller sites for which evidence suggests a primary role as farmsteads. Cavers and Geddes (2006) have suggested that Wigtownshire homesteads like Airyolland were effectively a Galloway version of Argyll duns and this perspective is supported by the landscape-based data in this thesis. In Kintyre and Skye, enclosed sites slightly larger than the roofable farmsteads can be shown to be marginally placed with respect to both fertile land and other prehistoric settlement sites. It is therefore possible that sites representing temporary occupation of, often defensible, outlying areas are present in the archaeological record. These enclosures may be prevalent throughout western Scotland, and there may be similar examples in Galloway, particularly among the more inaccessible and inhospitable of the promontory forts in Wigtownshire.

The step-change in internal area, observed across much of western Scotland, is apparent in Kintyre and Kirkcudbrightshire, but not in Skye. The sole enclosed site above the step-change in Kintyre is distinctly different in its landscape position to those of Kirkcudbrightshire, and this may indicate a difference in function and perhaps a consequential change in political structure. It has been shown that the large hilltop sites of Kirkcudbrightshire are clearly something different from the remainder of the settlement record in that region. It may be that they provide evidence for a hierarchical political structure throughout later prehistory in the region, although they could equally be the temporarily occupied communal or religious sites of a more egalitarian society. It is unknown for how long they were in use, and it is not certain that they were occupied throughout the Iron Age. Perhaps there is variety among them in that regard, with the multivallate examples such as Dunguile Hill exhibiting evidence for more phases of occupation than those with a single line of defence like Moyle Hill. It is possible that there was a substantial period in the 1st millennia BC and AD when none of these sites were in use, and therefore a political structure independent of them may be apparent in Kirkcudbrightshire. This could perhaps have been centred on dispersed enclosed settlements of moderate enclosed area, with prominent drystone forts of that size performing communal or defensive roles to a greater degree. This latter political system would be more like that evident in Kintyre and Skye.

Sites above the step-change in size (0.9 ha) are present throughout Atlantic Scotland, particularly in Mid Argyll, and the identification of the large territorial enclosure at Dunagoil may mean there are similarly extensive sites many more waiting to be found in the western Scottish sector more generally. On Islay and the Western Isles the function of the comparatively large promontory forts is unknown, but their presence is significant – there are few geographical regions in western Scotland that do not have large enclosed sites above the step-change in area. Perhaps we are seeing evidence supporting J.D. Hill's (1995) hypothesis that segmentary societies based on independent homesteads required communal sites to make their social structure function.

Upland forts of a similar size and construction are apparent in Kintyre and Kirkcudbrightshire. Indeed, there is a remarkable resemblance between the positions occupied by Ranachan Hill or Knock Scalbart in southern Kintyre and Auld Kirk of Lochroan or Suie Hill in Kirkcudbrightshire, despite the former region being considered characteristically Atlantic in nature, and the other not. It is likely that the similarity in their architecture, size and landscape location extended to function, and it is perhaps of significance that these prominent inland sites occur on the margins of areas that are very fertile (See Chapter 7.3 & 9.3) It is possible that valuable agricultural land required direct oversight in the form of controlling or protecting, or that production of food surpluses in these areas were a catalyst for social differentiation, which it is hypothesised could be manifest in such sites. Also of note is the presence of forts delimited by earthworks and ditches in southern Kintyre – the people living in Atlantic Scotland did not just build using drystone – and it is perhaps relevant that similarly constructed sites are apparent here and in central Islay (Chapter 4.5.1), both among the most agriculturally productive parts of the western coast.

10.5 Conclusions and further work

It is not possible identify definitively how many hillforts there are in western Scotland. This is not a declaration of failure - it is not a question that requires a definite answer, but one that stimulates thought about the character of the settlement record across the geographical diversity represented by western Scotland. Even after the analyses pursued here, what is and what is not a hillfort is not clearly definable, it is fluid – their size, construction and function may be hypothesised to vary regionally. Many comparatively small enclosed sites in western Scotland may have incorporated communal functions, and if a hillfort is defined as an enclosed site that has a role beyond that of a farmstead, there are many hillforts in the settlement record. It is possible to identify archetypal examples, ones that stand out for their size and prominence, that are the western Scottish equivalents of the hillforts that Hawkes described as 'needing no introduction' (Hawkes 1931, 60). We need to understand their function and chronology, however, before there can be certainty about how and why sites like Dunguile Hill or Creag a'Chapuill appear to be different in size of area enclosed and landscape position.

The methodology used in the case studies within this thesis was designed to provide insight while overcoming the lack of data about chronology and function gathered from modern excavations in the overall study area. The patterns observed should be of use to future researchers, contributing to archaeological understanding of these monuments while taking research as far as it can currently be taken using this approach and without widespread excavation. The data gathered can also be used to answer questions that have not been asked in this thesis, such as deeper analysis of those sites that are probably homesteads, which were not the most central concern of this thesis.

Further research into the settlement record of the region must involve prospection for the primarily invisible unenclosed settlement record, as well as enclosures in lowland areas that are cultivated or used as improved grassland today. Cropmarks identified by RCAHMS aerial survey in Galloway and Kintyre, for example several circular enclosures with substantial ditches in the Laggan of Kintyre (David Cowley pers. comm.), offer some insight into the nature and extent of what is missing, and the ditched enclosure and roundhouses excavated at Kiltaraglen, near Portree (Suddaby 2013), shows that structures built of perishable materials may have been widespread throughout what is conventionally considered to be Atlantic Scotland. In order to understand the upstanding remains further, there may be a case for widespread small-scale excavation in order to determine site dating (e.g. Cook 2011), as without a reliable chronological framework research into the landscape position and distribution patterns of this group of monuments will always be restricted in value by the absence of chronological control. A large-scale excavation of a site lying above the step change in area, for example Dunguile Hill or Creag a'Chapuill, is badly needed, as well as investigation of a prominent drystone fort among the smaller enclosures. Only in this way can insight into the range of functions performed by prehistoric communal enclosures and their inhabitants in western Scotland be further progressed.

None the less, the analyses carried out in this thesis have generated new data concerning the landscape position of enclosed sites in western Scotland, and the methodology utilised has enabled a geographically broader comparison of site attributes than has previously been attempted. Systematic patterns incorporating the positioning, enclosed area and morphology of sites have been identified, enabling the sub-classification of the enclosed settlement record of the region in a way that is underpinned by empirical evidence. This work has consequently helped to correct an imbalance in the study of larger enclosed sites in Scotland which has heretofore been mainly focused on the East.

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Appendix 1

Kintyre case study sites

NMRSNAME	CLASSSUB	CANMORE ID	PARISH	NGRE	NGRN	X	Y	COUNTY_NAME	DISTRICT_NAME	AREA	ALTITUDE	DRYSTONE/EARTHWORK	URL	OUTWORKS	VITRIFICATION	COMPLEX ARCHITECTURE	SHAPE
ACHNACLACH	FORT	38337	CAMPBELTOWN	68780	15454	168780	615454	ARGYLL	ARGYLL AND BUTE	2128	170	S	http://canmore.rcahms.gov.uk/en/site/38337/				
BALLOCH HILL	FORT	38340	CAMPBELTOWN	6777	1767	167770	617670	ARGYLL	ARGYLL AND BUTE	704	152	S	http://canmore.rcahms.gov.uk/en/site/38340/				
BALLYWILLINE HILL	FORT	38808	CAMPBELTOWN	7170	2386	171700	623860	ARGYLL	ARGYLL AND BUTE	1320	216	S	http://canmore.rcahms.gov.uk/en/site/38808/				
BARASKOMILL	FORT	38804	CAMPBELTOWN	7368	2152	173680	621520	ARGYLL	ARGYLL AND BUTE	2752	120	S	http://canmore.rcahms.gov.uk/en/site/38804/				
BELFIELD	DUN, FORT	38828	CAMPBELTOWN	7292	2123	172920	621230	ARGYLL	ARGYLL AND BUTE	946	95	S	http://canmore.rcahms.gov.uk/en/site/38828/				
CARRADALE POINT	FORT	39221	SADDELL AND SKIPNESS	8151	3649	181510	636490	ARGYLL	ARGYLL AND BUTE	1195	23	S	http://canmore.rcahms.gov.uk/en/site/39221/		Y		
CNOC ARAICH	FORT	38296	SOUTHEND	6925	0965	169250	609650	ARGYLL	ARGYLL AND BUTE	25998	90	E	http://canmore.rcahms.gov.uk/en/site/38296/				
CULLAN DOON	DUN, FORT	38319	CAMPBELTOWN	6995	1703	169950	617030	ARGYLL	ARGYLL AND BUTE	1610	145	S	http://canmore.rcahms.gov.uk/en/site/38319/				
DUNAN	FORT	38219	SOUTHEND	5930	1130	159300	611300	ARGYLL	ARGYLL AND BUTE	473	23	S	http://canmore.rcahms.gov.uk/en/site/38219/				
GLENEHERVIE	FORT	38734	SOUTHEND	7398	1084	173980	610840	ARGYLL	ARGYLL AND BUTE	2470	154	N/A	http://canmore.rcahms.gov.uk/en/site/38734/				
KILDALLOIG	FORT	38707	CAMPBELTOWN	7456	1849	174560	618490	ARGYLL	ARGYLL AND BUTE	1228	120	E	http://canmore.rcahms.gov.uk/en/site/38707/				
KILDONAN POINT	FORT	38740	CAMPBELTOWN	7824	2715	178240	627150	ARGYLL	ARGYLL AND BUTE	2217	16	S	http://canmore.rcahms.gov.uk/en/site/38740/				
KILLOCRAW	FORT	38472	KILLEAN AND KILCHENZIE	6585	3105	165850	631050	ARGYLL	ARGYLL AND BUTE	778	45	S	http://canmore.rcahms.gov.uk/en/site/38472/				
KNOCK SCALBART	FORT	38807	CAMPBELTOWN	7302	2222	173020	622220	ARGYLL	ARGYLL AND BUTE	1791	213	S	http://canmore.rcahms.gov.uk/en/site/38807/				
LARGIEMORE	FORT	38369	KILLEAN AND KILCHENZIE	6812	2595	168120	625950	ARGYLL	ARGYLL AND BUTE	1623	160	S	http://canmore.rcahms.gov.uk/en/site/38369/				
MACHRIHANISH	FORT	38430	CAMPBELTOWN	6348	2066	163480	620660	ARGYLL	ARGYLL AND BUTE	657	25	S	http://canmore.rcahms.gov.uk/en/site/38430/				
PUTECHANTUY	FORT	38476	KILLEAN AND KILCHENZIE	6570	3146	165700	631460	ARGYLL	ARGYLL AND BUTE	306	20	S	http://canmore.rcahms.gov.uk/en/site/38476/				
RANACHAN HILL	FORT	38368	CAMPBELTOWN	6889	2500	168890	625000	ARGYLL	ARGYLL AND BUTE	3400	212	S	http://canmore.rcahms.gov.uk/en/site/38368/				
SADDELL HOUSE	FORT	38870	SADDELL AND SKIPNESS	7948	3207	179480	632070	ARGYLL	ARGYLL AND BUTE	568	57	S	http://canmore.rcahms.gov.uk/en/site/38870/				
SRON UAMHA	FORT	38308	SOUTHEND	6119	0603	161190	606030	ARGYLL	ARGYLL AND BUTE	288	95	S	http://canmore.rcahms.gov.uk/en/site/38308/				
WESTPORT	FORT	38378	KILLEAN AND KILCHENZIE	6550	2673	165500	626730	ARGYLL	ARGYLL AND BUTE	1111	8	B	http://canmore.rcahms.gov.uk/en/site/38378/				
BALEGREGGEN HILL	DUN	38823	CAMPBELTOWN	7202	2182	172020	621820	ARGYLL	ARGYLL AND BUTE	250	124	S	http://canmore.rcahms.gov.uk/en/site/38823/				SC
BALLYGROGGAN	DUN	38342	CAMPBELTOWN	6190	1859	161900	618590	ARGYLL	ARGYLL AND BUTE	283	136	S	http://canmore.rcahms.gov.uk/en/site/38342/				O
BALLYGROGGAN	DUN	38343	CAMPBELTOWN	6212	1908	162120	619080	ARGYLL	ARGYLL AND BUTE	150	112	S	http://canmore.rcahms.gov.uk/en/site/38343/				SC
BALLYWILLINE	DUN	38810	CAMPBELTOWN	7159	2283	171590	622830	ARGYLL	ARGYLL AND BUTE	515	85	S	http://canmore.rcahms.gov.uk/en/site/38810/	Y			SC
BALNAGLECK	DUN	38380	KILLEAN AND KILCHENZIE	6829	2530	168290	625300	ARGYLL	ARGYLL AND BUTE	380	120	S	http://canmore.rcahms.gov.uk/en/site/38380/				SC
BARASKOMILL	DUN	38809	CAMPBELTOWN	7424	2130	174240	621300	ARGYLL	ARGYLL AND BUTE	177	99	S	http://canmore.rcahms.gov.uk/en/site/38809/				C
BELFIELD	DUN, FORT	38828	CAMPBELTOWN	7292	2123	172920	621230	ARGYLL	ARGYLL AND BUTE	133	95	S	http://canmore.rcahms.gov.uk/en/site/38828/	Y			O
BELLOCHANTUY	DUN	38475	KILLEAN AND KILCHENZIE	6644	3239	166440	632390	ARGYLL	ARGYLL AND BUTE	228	53	S	http://canmore.rcahms.gov.uk/en/site/38475/				SC
BORGADEL WATER	DUN	38310	SOUTHEND	6254	0614	162540	606140	ARGYLL	ARGYLL AND BUTE	141	105	S	http://canmore.rcahms.gov.uk/en/site/38310/			Y	C
CNOC EIBHLEACH	DUN	38688	SOUTHEND	7145	0783	171450	607830	ARGYLL	ARGYLL AND BUTE	250	59	S	http://canmore.rcahms.gov.uk/en/site/38688/				SO
CNOC SABHAIL	DUN	38429	CAMPBELTOWN	6362	2047	163620	620470	ARGYLL	ARGYLL AND BUTE	82	45	S	http://canmore.rcahms.gov.uk/en/site/38429/				O
CORPUTECHAN	DUN	38474	KILLEAN AND KILCHENZIE	6785	3352	167850	633520	ARGYLL	ARGYLL AND BUTE	190	145	S	http://canmore.rcahms.gov.uk/en/site/38474/	Y			SC
CULINLONGART	DUN	38354	SOUTHEND	6564	1158	165640	611580	ARGYLL	ARGYLL AND BUTE	74	63	S	http://canmore.rcahms.gov.uk/en/site/38354/	Y			Irr
CULLAN DOON	DUN, FORT	38319	CAMPBELTOWN	6995	1703	169950	617030	ARGYLL	ARGYLL AND BUTE	400	145	S	http://canmore.rcahms.gov.uk/en/site/38319/				SO
CULLIBURN	DUN	38770	CAMPBELTOWN	7154	2521	171540	625210	ARGYLL	ARGYLL AND BUTE	200	132	S	http://canmore.rcahms.gov.uk/en/site/38770/				SR
DUN A' BHUIC	DUN	38473	KILLEAN AND KILCHENZIE	6658	3370	166580	633700	ARGYLL	ARGYLL AND BUTE	154	25	S	http://canmore.rcahms.gov.uk/en/site/38473/				C
DUN FHINN	DUN	38467	KILLEAN AND KILCHENZIE	6572	3064	165720	630640	ARGYLL	ARGYLL AND BUTE	78	20	S	http://canmore.rcahms.gov.uk/en/site/38467/				SR
DUN GLAS	DUN	38694	SOUTHEND	7053	0959	170530	609590	ARGYLL	ARGYLL AND BUTE	150	52	S	http://canmore.rcahms.gov.uk/en/site/38694/				SC
DUN MHIC CHOIGIL	DUN	38479	KILLEAN AND KILCHENZIE	6561	3016	165610	630160	ARGYLL	ARGYLL AND BUTE	95	11	S	http://canmore.rcahms.gov.uk/en/site/38479/	Y			D
DUN SHEALLAIDH	DUN	38478	KILLEAN AND KILCHENZIE	6658	3472	166580	634720	ARGYLL	ARGYLL AND BUTE	930	73	S	http://canmore.rcahms.gov.uk/en/site/38478/				SC
HIGH KEIL	DUN	38307	SOUTHEND	6789	0802	167890	608020	ARGYLL	ARGYLL AND BUTE	170	30	S	http://canmore.rcahms.gov.uk/en/site/38307/				C
KILCHRIST	DUN	38328	CAMPBELTOWN	69712	17665	169712	617665	ARGYLL	ARGYLL AND BUTE	63	98	S	http://canmore.rcahms.gov.uk/en/site/38328/	Y			O
KILDALLOIG	DUN	38708	CAMPBELTOWN	7453	1904	174530	619040	ARGYLL	ARGYLL AND BUTE	141	82	S	http://canmore.rcahms.gov.uk/en/site/38708/			Y	SC
KILDONAN BAY	DUN	38756	CAMPBELTOWN	7806	2778	178060	627780	ARGYLL	ARGYLL AND BUTE	200	12	S	http://canmore.rcahms.gov.uk/en/site/38756/			Y	T
KILKEDDAN	DUN	38783	CAMPBELTOWN	7489	2619	174890	626190	ARGYLL	ARGYLL AND BUTE	450	38	S	http://canmore.rcahms.gov.uk/en/site/38783/				NV
KILLELLAN	DUN	38329	CAMPBELTOWN	6858	1503	168580	615030	ARGYLL	ARGYLL AND BUTE	55	122	S	http://canmore.rcahms.gov.uk/en/site/38329/	Y			O
MOTE HILL, GLENCRAIGS, KIN	DUN	38412	CAMPBELTOWN	6933	2345	169330	623450	ARGYLL	ARGYLL AND BUTE	95	34	S	http://canmore.rcahms.gov.uk/en/site/38412/				SC
ORMSARY	DUN	38357	SOUTHEND	6640	1067	166400	610670	ARGYLL	ARGYLL AND BUTE	63	74	S	http://canmore.rcahms.gov.uk/en/site/38357/				SC
PORT A' CHAISTEIL	DUN	38365	KILLEAN AND KILCHENZIE	6549	2738	165490	627380	ARGYLL	ARGYLL AND BUTE	72	9	S	http://canmore.rcahms.gov.uk/en/site/38365/				Irr
PORT NAM MARBH	DUN	38379	KILLEAN AND KILCHENZIE	6551	2720	165510	627200	ARGYLL	ARGYLL AND BUTE	120	2	S	http://canmore.rcahms.gov.uk/en/site/38379/				NV
RUBH A'MHARAICHE	DUN	38218	SOUTHEND	5929	1255	159290	612550	ARGYLL	ARGYLL AND BUTE	133	185	S	http://canmore.rcahms.gov.uk/en/site/38218/			Y	SC
RUBHA NAN SGARBH	DUN	38869	SADDELL AND SKIPNESS	7975	3402	179750	634020	ARGYLL	ARGYLL AND BUTE	260	12	S	http://canmore.rcahms.gov.uk/en/site/38869/				SO
THE BASTARD	DUN	38722	SOUTHEND	7612	1220	176120	612200	ARGYLL	ARGYLL AND BUTE	295	80	S	http://canmore.rcahms.gov.uk/en/site/38722/	Y			O
THE DOUNE	DUN	38721	SOUTHEND	7541	1153	175410	611530	ARGYLL	ARGYLL AND BUTE	192	116	S	http://canmore.rcahms.gov.uk/en/site/38721/				SC
TRENCH KNOWE	DUN	38767	CAMPBELTOWN	7396	2569	173960	625690	ARGYLL	ARGYLL AND BUTE	175	55	S	http://canmore.rcahms.gov.uk/en/site/38767/				C
UGADALE POINT, KINTYRE	DUN	38760	CAMPBELTOWN	7851	2851	178510	628510	ARGYLL	ARGYLL AND BUTE	226	6	S	http://canmore.rcahms.gov.uk/en/site/38760/				SR

Kintyre land and sea cumulative viewsheds

Site	Land viewshed Max points	Land viewshed Mean points	Sea viewshed Max points	Sea viewshed Mean Points
(D) Balegreggen Hill	99	43.22	50	26
(D) Ballygroggan N	72	71.50	161	138
(D) Ballygroggan S	44	29.76	139	87
(D) Ballywilline	91	47.47	20	8
(D) Balnagleck	67	64.21	129	129
(D) Baraskomill	48	40.88	142	103
(D) Belfield	104	78.08	59	39
(D) Bellochantuy	16	10.00	241	156
(D) Borgadel Water	1	0.57	230	220
(D) Cnoc Eibhleach	19	10.77	284	218
(D) Cnoc Sabhail	110	109.33	118	102
(D) Corputechan	29	24.16	209	141
(D) Culinlongart	9	7.18	14	11
(D) Cullan Doon	102	64.54	28	25
(D) Culliburn	23	10.30	1	0
(D) Dun a'Bhuic	16	7.41	231	185
(D) Dun Fhinn	4	3.00	253	161
(D) Dun Glas	46	32.81	79	71
(D) Dun Mhic Choigil	35	35.00	248	239
(D) Dun Sheallaidh	58	33.00	242	207
(D) High Keil	11	9.33	201	178
(D) Kilchrist	94	54.93	35	22
(D) Kildalloig	55	50.20	44	25
(D) Kildonan Bay	28	23.13	169	162
(D) Kilkeddan	6	6.00	94	89
(D) Killellan	30	20.64	2	1
(D) Mote Hill Glencraigs	72	61.50	27	15
(D) Ormsary	23	21.00	46	44
(D) Port a'Chaisteil	36	20.67	172	58
(D) Port nam Marbh	34	31.14	177	112

(D) Rubh a Mharaiche	8	5.71	300	167
(D) Rubh nan Sgarbh	11	9.33	102	81
(D) The Bastard	0	0.00	187	158
(D) The Doune	14	10.33	201	138
(D) Trench Knowe	21	15.25	11	11
(D) Ugadale Point	36	22.30	178	134
Achnaclach	132	70.02	7	4
Balloch Hill	145	83.07	52	28
Ballywilline Hill	179	87.95	78	45
Baraskomill	71	39.62	135	45
Belfield	104	58.54	59	34
Carradale Point	72	30.58	108	86
Cnoc Araich	57	32.20	90	27
Cullan Doon	102	55.30	28	21
Dunan	1	1.00	252	191
Glenehervie	60	24.44	239	152
Kildalloig	89	46.77	129	64
Kildonan Point	58	24.27	199	82
Killocraw	38	27.57	264	164
Knock Scalbart	181	47.58	190	98
Largiemore	116	47.52	103	41
Machrihanish	89	30.97	182	100
Putechantuy	35	29.67	269	240
Ranachan Hill	211	117.13	141	59
Saddell House	54	40.82	150	66
Sron Uamha	2	0.86	308	177
Westport	36	24.78	246	178

Kintyre 10 km visibility

Site	% area vis (incl sea)	% land vis	% sites vis	% land vis Ag	% land vis non ag	# sites visible
(D) Balegreggen Hill	21	21	39	68.5	31.5	12
(D) Ballygroggan N	33	6	30	55	45	6
(D) Ballygroggan S	22.5	2	15	14	86	3
(D) Ballywilline	11	13.5	19	74	26	6
(D) Balnagleck	26.5	11	26.5	76	24	10
(D) Baraskomill	31	7	18.5	60.5	39.5	5
(D) Belfield	15.5	14	21	74	26	6
(D) Bellochantuy	40	1.5	20	65.5	34.5	5
(D) Borgadel Water	41	1	0	0	100	0
(D) Cnoc Eibhleach	47	3.5	7	14	86	1
(D) Cnoc Sabhail	46	19	56	67.5	32.5	14
(D) Corputechan	32.5	1.5	7.5	23.5	76.5	2
(D) Culinlongart	4	3	0	31.5	68.5	0
(D) Cullan Doon	13	13.5	15	62.5	37.5	5
(D) Culliburn	4.5	6	9	14	86	3
(D) Dun a'Bhuic	42	1	11.5	84	16	3
(D) Dun Fhinn	44	0	8	100	0	2
(D) Dun Glas	17	10	18	57.5	52.5	3
(D) Dun Mhic Choigil	50	1	15	90	10	4
(D) Dun Sheallaidh	47	8.5	24	31	69	6
(D) High Keil	36	2	0	74	26	0
(D) Kilchrist	13.5	13	14	74	26	5
(D) Kildalloig	14.5	10	33	66	34	9
(D) Kildonan Bay	47	2	25	34	66	5
(D) Kilkeddan	16	1.5	8	52	48	2
(D) Killellan	3	4	6	46.5	53.5	2
(D) Mote Hill Glencraigs	10	12	25	68	32	9
(D) Ormsary	10	5	0	39	61	0
(D) Port a'Chaisteil	46	4	17	69	31	5
(D) Port nam Marbh	46	4	19	65.5	34.5	6
(D) Rubh a Mharaiche	48	1	0	0	100	0
(D) Rubh nan Sgarbh	39	6	12.5	45.5	54.5	1
(D) The Bastard	37	0	0	0	100	0
(D) The Doune	40.5	4	6	10.5	89.5	1
(D) Trench Knowe	6	3	3.5	24	76	1
(D) Ugadale Point	49	4	19	22.5	77.5	3
Achnaclach	12.5	16	28	53.5	46.5	9

Balloch Hill	23	20.5	44.5	66	34	16
Ballywilline Hill	30	29.5	36	50.5	49.5	12
Baraskomill	26.5	11	13	69.5	30.5	4
Belfield	15.5	14	21	74	26	6
Carradale Point	41	15.5	43	24	76	3
Cnoc Araich	22	13	19	55	45	3
Cullan Doon	13	13.5	15	62.5	37.5	5
Dunan	41.5	7	0	94	6	0
Glenehervie	45.5	12	19	48.5	51.5	3
Kildalloig	31	13	37	62.5	37.5	10
Kildonan Point	55	7	35	35	65	7
Killocraw	48.5	3	27	37.5	62.5	7
Knock Scalbart	47	30	46.5	54.5	45.5	13
Largiemore	29	18.5	28	68.5	31.5	10
Machrihanish	40	13	58	63	37	15
Putechantuy	50.5	1.5	23	53	47	6
Ranachan Hill	43	35	45	54	46	17
Saddell House	50	6	57	35.5	64.5	4
Sron Uamha	54	0.3	0	0	100	0
Westport	47	5	19	60	40	6

Kintyre 5 km visibility

Site	**% area vis (incl sea)**	**% land vis**	**% sites vis**	% land vis Ag	% land vis non ag	Sqm of ag land visible	# sites visible
(D) Balegreggen Hill	34	35	57	69.5	30.5	376993	8
(D) Ballygroggan N	31	2	0	38	62	16556295	0
(D) Ballygroggan S	11	7	0	0	100	365212	0
(D) Ballywilline	15	17	13	75.5	24.5	0	2
(D) Balnagleck	22	16	11	83.5	16.5	8894689	1
(D) Baraskomill	37.5	18	33	50.5	49.5	8639433	4
(D) Belfield	22	20.5	25	69.5	30.5	4417892	3
(D) Bellochantuy	41	5	55.5	68	32	8466644	5
(D) Borgadel Water	41	2.5	0	0	100	1610076	0
(D) Cnoc Eibhleach	46.5	3	0	50.5	49.5	0	0
(D) Cnoc Sabhail	54	30	33	82	18	547819	1
(D) Corputechan	18.5	5	15	23.5	76.5	11239117	2
(D) Culinlongart	7	7	0	34	66	653848	0
(D) Cullan Doon	21	22	17	64	36	1786792	1
(D) Culliburn	14	14	21.5	15	85	10555816	3
(D) Dun a'Bhuic	42	3	25	85	15	1649346	3
(D) Dun Fhinn	43	0	18	100	0	989608	2
(D) Dun Glas	25	25.5	40	68	32	0	2
(D) Dun Mhic Choigil	51	2	8	99	1	9228485	1
(D) Dun Sheallaidh	55	24.5	43	37	63	600833	6
(D) High Keil	42	7	0	88	12	3887745	0
(D) Kilchrist	23.5	24	12.5	85	15	2638954	1

(D) Kildalloig	20.5	15	54.5	82	18	15688425	6
(D) Kildonan Bay	47.5	5	60	34.5	65.5	6118289	3
(D) Kilkeddan	15.5	5	10	52	48	559600	1
(D) Killellan	11.5	11.5	14	45	55	1582587	1
(D) Mote Hill Glencraigs	14	14	11	83	17	4064461	1
(D) Ormsary	14	12	0	45.5	54.5	9126383	0
(D) Port a'Chaisteil	48	0.5	22	52	48	3628562	2
(D) Port nam Marbh	48	1	33	73	27	0	3
(D) Rubh a Mharaiche	48	4	0	0	100	188497	0
(D) Rubh nan Sgarbh	45	6	50	29	71	0	1
(D) The Bastard	36	0	0	0	100	706863	0
(D) The Doune	43	12	50	11.5	88.5	0	1
(D) Trench Knowe	9	9.5	8	25.5	74.5	337723	1
(D) Ugadale Point	55	13	75	19	81	1484412	3
Achnaclach	27	27	33	46	54	1079929	2
Balloch Hill	44	44	80	71	29	9754705	4
Ballywilline Hill	34.5	38	28.5	42	58	24535990	4
Baraskomill	25	17	31	49	51	11380489	4
Belfield	22	20.5	25	69.5	30.5	4712418	3
Carradale Point	59	27	100	23.5	76.5	8466644	2
Cnoc Araich	34	32	33	69	31	1853551	2
Cullan Doon	21	22	17	64	36	12550740	1
Dunan	42	13	0	0	100	10555816	0
Glenehervie	45	20	60	58	42	0	3
Kildalloig	24	15.5	60	81	19	5478186	6
Kildonan Point	66	20	50	29.5	70.5	6220392	2
Killocraw	51	9	54.5	41	59	1814281	6
Knock Scalbart	45.5	40	61.5	57	43	1401944	8
Largiemore	26	20	30	70	30	13758297	3
Machrihanish	44.5	16	33	80	20	8985010	1
Putechantuy	53	3.5	45.5	84.5	15.5	5592069	5
Ranachan Hill	50	47.5	54.5	57	43	1040659	6
Saddell House	57	18	75	36.5	63.5	19438724	3
Sron Uamha	48.5	1	0	0	100	2462238	0
Westport	48	1	22	68	32	0	2

Kintyre 1 km visibility

Site	**% area vis (incl sea)**	**% land vis**	**% sites vis**	% land vis Ag	% land vis non ag	Sqm of ag land visible	# sites vis
(D) Balegreggen Hill	51	51	N/A	83	17	1329860	0
(D) Ballygroggan N	11.5	14	0	58	42	207742	0
(D) Ballygroggan S	34	36	0	0	100	0	0
(D) Ballywilline	39	39	N/A	38	62	465593	0
(D) Balnagleck	42.5	42.5	50	71.5	28.5	954669	1
(D) Baraskomill	33	20	100	93	7	445800	1

(D) Belfield	52.5	44	0	97.5	2.5	1096829	0
(D) Bellochantuy	50	33	N/A	100	0	722580	0
(D) Borgadel Water	49	31	N/A	0	100	0	0
(D) Cnoc Eibhleach	45	20	N/A	100	N/A	395848	0
(D) Cnoc Sabhail	73	64	100	100	N/A	1456312	1
(D) Corputechan	31	31	N/A	2	98	19478	0
(D) Culinlongart	44	44	N/A	41	59	566754	0
(D) Cullan Doon	58	58	0	58.5	41.5	1065962	0
(D) Culliburn	40.5	40.5	N/A	48.5	51.5	617099	0
(D) Dun a'Bhuic	52.5	27.5	N/A	98	2	544291	0
(D) Dun Fhinn	42	4.5	67	100	0	79170	2
(D) Dun Glas	83	83	N/A	88	12	2294661	0
(D) Dun Mhic Choigil	60	18	0	100	0	282749	0
(D) Dun Sheallaidh	69	55	100	100	N/A	1192256	1
(D) High Keil	48	22	N/A	86.5	13.5	376998	0
(D) Kilchrist	49	49	0	90	10	1385468	0
(D) Kildalloig	33	12	0	67	33	176247	0
(D) Kildonan Bay	55	29	100	92	8	466535	2
(D) Kilkeddan	45	45	N/A	45	55	636184	0
(D) Killellan	52	52	100	78	22	1274253	1
(D) Mote Hill Glencraigs	60	60	N/A	66.5	33.5	1253518	0
(D) Ormsary	62.5	62.5	N/A	56.5	43.5	1109395	0
(D) Port a'Chaisteil	50	7	100	99	1	109958	2
(D) Port nam Marbh	54	14	100	99.5	0.5	220544	2
(D) Rubh a Mharaiche	38	13.5	N/A	0	100	0	0
(D) Rubh nan Sgarbh	77	53.5	N/A	0	100	0	0
(D) The Bastard	29.5	5	0	0	100	0	0
(D) The Doune	45	60	0	29	71	374642	0
(D) Trench Knowe	40.5	40.5	N/A	56	44	712526	0
(D) Ugadale Point	87	65	100	70	30	519315	1
Achnaclach	44	44	100	72	28	995275	1
Balloch Hill	72	72	N/A	95	5	2148889	0
Ballywilline Hill	38	38	N/A	3	97	35815	0
Baraskomill	36	36	50	73.5	26.5	831281	2
Belfield	52.5	44	0	97.5	2.5	1096829	0
Carradale Point	85	28	N/A	0.5	99.5	0	0
Cnoc Araich	71	71	N/A	98.5	1.5	2197113	0
Cullan Doon	58	58	0	58.5	41.5	1065962	0
Dunan	57	23	N/A	0	100	0	0
Glenehervie	59	59	N/A	37	63	685822	0
Kildalloig	10	10	0	28	72	87966	0
Kildonan Point	93.5	84.5	100	99	1	749048	1
Killocraw	56	31	33	100	0	598170	1
Knock Scalbart	44	44	33	32.5	67.5	449256	1
Largiemore	38	38	100	50.5	49.5	602883	1
Machrihanish	58	35	100	100	N/A	637755	1
Putechantuy	59.5	15	50	0	100	0	1

Ranachan Hill	30	30	0	4	96	37700	0
Saddell House	70	60	N/A	73	27	736717	0
Sron Uamha	48	9	N/A	0	100	0	0
Westport	57.5	21	100	86	14	298064	2

10 km Proximity

Site	# sites	% of land Ag
(D) Balegreggen Hill	31	38.5
(D) Ballygroggan N	20	30.5
(D) Ballygroggan S	20	37.5
(D) Ballywilline	32	38
(D) Balnagleck	37	40
(D) Baraskomill	27	39.5
(D) Belfield	29	36.5
(D) Bellochantuy	25	23.5
(D) Borgadel Water	9	25
(D) Cnoc Eibhleach	14	32
(D) Cnoc Sabhail	25	38.5
(D) Corputechan	27	20.5
(D) Culinlongart	21	34
(D) Cullan Doon	33	41
(D) Culliburn	34	34.5
(D) Dun a’Bhuic	26	21.5
(D) Dun Fhinn	26	27
(D) Dun Glas	17	31.5
(D) Dun Mhic Choigil	27	29.5
(D) Dun Sheallaidh	25	19.5
(D) High Keil	18	28
(D) Kilchrist	36	43
(D) Kildalloig	27	43.5
(D) Kildonan Bay	20	19
(D) Kilkeddan	25	28.5
(D) Killellan	32	37
(D) Mote Hill Glencraigs	36	39
(D) Ormsary	19	32
(D) Port a’Chaisteil	30	38.5
(D) Port nam Marbh	31	39
(D) Rubh a Mharaiche	13	23.5
(D) Rubh nan Sgarbh	8	11
(D) The Bastard	19	41
(D) The Doune	17	41
(D) Trench Knowe	29	31.5
(D) Ugadale Point	16	17
Achnaclach	32	45
Balloch Hill	36	40
Ballywilline Hill	33	38
Baraskomill	30	39
Belfield	29	39.5
Carradale Point	7	11
Cnoc Araich	16	29
Cullan Doon	33	43
Dunan	9	20
Glenehervie	16	39.5
Kildalloig	27	44.5
Kildonan Point	20	20
Killocraw	26	25.5
Knock Scalbart	28	39

Largiemore	36	40.5
Machrihanish	26	41.5
Putechantuy	26	25
Ranachan Hill	38	40
Saddell House	7	12
Sron Uamha	8	21.5
Westport	31	39

5 km Proximity

Site	# sites	% of land Ag	Sqm of Ag land
(D) Balegreggen Hill	14	58	38877226
(D) Ballygroggan N	3	29.5	12566376
(D) Ballygroggan S	3	27	10995579
(D) Ballywilline	15	60.5	40055324
(D) Balnagleck	9	48.5	32986737
(D) Baraskomill	12	52	25918151
(D) Belfield	12	50	30630542
(D) Bellochantuy	9	30	13351775
(D) Borgadel Water	1	11	3926993
(D) Cnoc Eibhleach	4	65.5	22776557
(D) Cnoc Sabhail	3	52	23954654
(D) Corputechan	13	24.5	14137173
(D) Culinlongart	5	33	24347354
(D) Cullan Doon	6	47	36128331
(D) Culliburn	14	37.5	29059745
(D) Dun a’Bhuic	12	31	14137173
(D) Dun Fhinn	11	34.5	12959075
(D) Dun Glas	5	55	29452444
(D) Dun Mhic Choigil	12	36	13351775
(D) Dun Sheallaidh	14	33	14137173
(D) High Keil	5	54.5	24347354
(D) Kilchrist	8	64.5	41626121
(D) Kildalloig	11	38.5	18849564
(D) Kildonan Bay	5	20	7068587
(D) Kilkeddan	10	25	14529872
(D) Killellan	7	38.5	30237842
(D) Mote Hill Glencraigs	11	53	39662624
(D) Ormsary	5	36.5	25918151
(D) Port a’Chaisteil	9	42	16493369
(D) Port nam Marbh	9	21	16493369
(D) Rubh a Mharaiche	1	1	392699
(D) Rubh nan Sgarbh	2	17	7068587
(D) The Bastard	2	17	5497790
(D) The Doune	2	23	8639384
(D) Trench Knowe	12	29	18849564
(D) Ugadale Point	4	22	6283188
Achnaclach	6	39	30630542
Balloch Hill	5	54	42018820
Ballywilline Hill	14	49.5	35342933
Baraskomill	13	54	30630542
Belfield	12	54	32986737
Carradale Point	2	19	6283188
Cnoc Araich	6	55	31415940
Cullan Doon	6	47	36128331
Dunan	1	0.6	235620
Glenehervie	5	37	17278767
Kildalloig	10	35.5	17671466
Kildonan Point	4	21.5	6675887

Killocraw	11	34	12959075
Knock Scalbart	13	55.5	33772136
Largiemore	10	77	28667045
Machrihanish	3	52.5	23169256
Putechantuy	11	34.5	12959075
Ranachan Hill	11	48.5	35342933
Saddell House	4	14.5	5105090
Sron Uamha	1	5	1335177
Westport	9	41	16886068

1 km Proximity

Site	# sites	% land Ag	Sqm of Ag land
(D) Balegreggen Hill	0	80	2513320
(D) Ballygroggan N	1	28	722580
(D) Ballygroggan S	1	8	219916
(D) Ballywilline	0	37	1162411
(D) Balnagleck	2	37	1162411
(D) Baraskomill	1	92.5	2167739
(D) Belfield	2	76	1947823
(D) Bellochantuy	0	90	1979240
(D) Borgadel Water	0	0	0
(D) Cnoc Eibhleach	0	100	1994948
(D) Cnoc Sabhail	1	100	2277696
(D) Corputechan	0	17	534081
(D) Culinlongart	0	47.5	1492284
(D) Cullan Doon	1	60	1884990
(D) Culliburn	0	42	1319493
(D) Dun a'Bhuic	0	86	1759324
(D) Dun Fhinn	3	85	1445159
(D) Dun Glas	0	89	2796069
(D) Dun Mhic Choigil	2	83	1256660
(D) Dun Sheallaidh	1	100	2167739
(D) High Keil	0	74	1539409
(D) Kilchrist	2	84	2638986
(D) Kildalloig	1	58.5	1303785
(D) Kildonan Bay	2	75	1288077
(D) Kilkeddan	0	45	1413743
(D) Killellan	1	79	2481904
(D) Mote Hill Glencraigs	0	51	1602242
(D) Ormsary	0	56	1759324
(D) Port a'Chaisteil	2	100	1570825
(D) Port nam Marbh	2	98.5	1570825
(D) Rubh a Mharaiche	0	0	0
(D) Rubh nan Sgarbh	0	0	0
(D) The Bastard	1	11	204207
(D) The Doune	1	19.5	424123
(D) Trench Knowe	0	47.5	1492284
(D) Ugadale Point	1	58	659747
Achnaclach	1	70.5	2214863
Balloch Hill	0	95	2984568
Ballywilline Hill	0	4.5	141374
Baraskomill	4	75	2324821
Belfield	2	92	2371946
Carradale Point	0	1	0
Cnoc Araich	0	99	3110234
Cullan Doon	1	60	1884990
Dunan	0	0	0
Glenehervie	0	38	1162411
Kildalloig	1	46.5	1413743

Kildonan Point	1	99	879662
Killocraw	3	91	1743616
Knock Scalbart	3	40.5	1272368
Largiemore	1	37	1162411
Machrihanish	1	100	1837865
Putechantuy	2	0	0
Ranachan Hill	1	12	376998
Saddell House	0	56	942495
Sron Uamha	0	0	0
Westport	2	91	1492284

10 km Relative Height

Site	Site Height m. OD	Mean Height of landscape m. OD	% land below	% land above
(D) Balegreggen Hill	123	126	49	51
(D) Ballygroggan N	114	129	47	53
(D) Ballygroggan S	135	132	53	47
(D) Ballywilline	98	130	38	62
(D) Balnagleck	130	132	50	50
(D) Baraskomill	99	120	42	58
(D) Belfield	95	122	39	61
(D) Bellochantuy	50	172	12.5	87.5
(D) Borgadel Water	120	163	39	61
(D) Cnoc Eibhleach	58	131	21	79
(D) Cnoc Sabhail	53	126	27	73
(D) Corputechan	147	184	36	64
(D) Culinlongart	55	146	22	78
(D) Cullan Doon	144	115	64	36
(D) Culliburn	138	137	52	48
(D) Dun a'Bhuic	31	182	5	95
(D) Dun Fhinn	17	152	10	90
(D) Dun Glas	61	141	21	79
(D) Dun Mhic Choigil	15	147	11	89
(D) Dun Sheallaidh	71	187	13	87
(D) High Keil	36	154	10	90
(D) Kilchrist	97	115	45	55
(D) Kildalloig	84	110	40	60
(D) Kildonan Bay	13	173	3.5	96.5
(D) Kilkeddan	45	148	21	79
(D) Killellan	120	127	50.5	49.5
(D) Mote Hill Glencraigs	37	131	20	80

(D) Ormsary	73	150	25	75
(D) Port a'Chaisteil	9	125	5	95
(D) Port nam Marbh	7	125	2.5	97.5
(D) Rubh a Mharaiche	182	171	54	46
(D) Rubh nan Sgarbh	16	188	5	95
(D) The Bastard	94	114	45	55
(D) The Doune	115	114	54	46
(D) Trench Knowe	65	141	29	71
(D) Ugadale Point	9	179	3	97
Achnaclach	169	124	69	31
Balloch Hill	150	122	63.5	36.5
Ballywilline Hill	215	132	81	19
Baraskomill	130	122	54	46
Belfield	95	122	39	61
Carradale Point	22	184	6	94
Cnoc Araich	85	152	28	72
Cullan Doon	144	115	64	36
Dunan	31	177	6	94
Glenehervie	153	116	68	32
Kildalloig	132	108	62	38
Kildonan Point	16	166	5	95
Killocraw	46	157	16	84
Knock Scalbart	215	126	58	42
Largiemore	165	132	65	35
Machrihanish	20	125	16	84
Putechantuy	15	159	7	93
Ranachan Hill	215	133	80	20
Saddell House	55	189	14	86
Sron Uamha	105	173	30.5	69.5
Westport	12	124	10	90

5 km Relative Height

Site	**Site Height m. OD**	**Mean Height of landscape m. OD**	**% below – sea**	**% above – sea**
(D) Balegreggen Hill	123	87	71	29
(D) Ballygroggan N	114	158	34	66
(D) Ballygroggan S	135	168	35	65
(D) Ballywilline	98	81	60	40
(D) Balnagleck	130	90	65	35

(D) Baraskomill	99	105	51	49
(D) Belfield	95	98	53	47
(D) Bellochantuy	50	161	11.5	88.5
(D) Borgadel Water	120	207	24.5	75.5
(D) Cnoc Eibhleach	58	66	53	47
(D) Cnoc Sabhail	53	104	46	54
(D) Corputechan	147	166	40	60
(D) Culinlongart	55	145	19	81
(D) Cullan Doon	144	119	60	40
(D) Culliburn	138	117	62	38
(D) Dun a'Bhuic	31	158	6	94
(D) Dun Fhinn	17	148	5	95
(D) Dun Glas	61	87	42	58
(D) Dun Mhic Choigil	15	143	5	95
(D) Dun Sheallaidh	71	151	25	75
(D) High Keil	36	91	26.5	73.5
(D) Kilchrist	97	110	48	52
(D) Kildalloig	84	127	35	65
(D) Kildonan Bay	13	171	6	94
(D) Kilkeddan	45	154	10.5	89.5
(D) Killellan	120	140	43	57
(D) Mote Hill Glencraigs	37	71	44	56
(D) Ormsary	73	128	33.5	66.5
(D) Port a'Chaisteil	9	107	3	97
(D) Port nam Marbh	7	104	2	98
(D) Rubh a Mharaiche	182	232	27	73
(D) Rubh nan Sgarbh	16	160	9	91
(D) The Bastard	94	133	29	71
(D) The Doune	115	125	45	55
(D) Trench Knowe	65	143	18	82
(D) Ugadale Point	9	170	4	96
Achnaclach	169	137	65	35
Balloch Hill	150	113	64	36
Ballywilline Hill	215	91	97	3
Baraskomill	130	99	69	31
Belfield	95	98	53	47
Carradale Point	22	117	17	83
Cnoc Araich	85	90	56	44
Cullan Doon	144	119	60	40
Dunan	31	239	1	99
Glenehervie	153	109	71.5	28.5
Kildalloig	132	134	51	49
Kildonan Point	16	161	7	93
Killocraw	46	152	9.5	90.5
Knock Scalbart	215	89	73	27
Largiemore	165	100	81	19
Machrihanish	20	102	38	62
Putechantuy	15	151	4	96
Ranachan Hill	215	90	99	1
Saddell House	55	168	16.5	83.5
Sron Uamha	105	224	16	84
Westport	12	96	10.5	89.5

1 km Relative Height.

Site m. OD	Mean Height of landscape	% land below	% land above

	m. OD		
(D) Balegreggen Hill	72	90	10
(D) Ballygroggan N	111	44	56
(D) Ballygroggan S	127	52.5	47.5
(D) Ballywilline	102	47.5	52.5
(D) Balnagleck	118	46	54
(D) Baraskomill	75	72.5	27.5
(D) Belfield	81	62	38
(D) Bellochantuy	65	35	65
(D) Borgadel Water	140	36.5	63.5
(D) Cnoc Eibhleach	50	64	36
(D) Cnoc Sabhail	44	66	34
(D) Corputechan	140	66	34
(D) Culinlongart	101	32	68
(D) Cullan Doon	121	70	30
(D) Culliburn	126	65.5	34.5
(D) Dun a'Bhuic	59	24	76
(D) Dun Fhinn	59	14.5	85.5
(D) Dun Glas	35	91	9
(D) Dun Mhic Choigil	62	14	86
(D) Dun Sheallaidh	46	85	15
(D) High Keil	44	44	56
(D) Kilchrist	94	56	44
(D) Kildalloig	68	63	37
(D) Kildonan Bay	40	27	73
(D) Kilkeddan	76	38	62
(D) Killellan	95	74	26
(D) Mote Hill Glencraigs	48	51	49
(D) Ormsary	77	49.5	50.5
(D) Port a'Chaisteil	47	11	89
(D) Port nam Marbh	46	8	92
(D) Rubh a Mharaiche	187	38.5	61.5
(D) Rubh nan Sgarbh	79	7	93
(D) The Bastard	109	27.5	72.5
(D) The Doune	86	82	18
(D) Trench Knowe	98	40	60
(D) Ugadale Point	37	13	87
Achnaclach	116	91	9
Balloch Hill	79	88	12
Ballywilline Hill	153	100	0
Baraskomill	93	85	15
Belfield	81	62	38
Carradale Point	17	58	42
Cnoc Araich	45	88	12
Cullan Doon	121	70	30
Dunan	197	5	95
Glenehervie	104	87	13
Kildalloig	97	71	29
Kildonan Point	24	47	53
Killocraw	60	33	67
Knock Scalbart	119	100	0
Largiemore	123	87.5	12.5
Machrihanish	35	35	65
Putechantuy	47	15	85
Ranachan Hill	129	100	0
Saddell House	34	75	25
Sron Uamha	173	19.5	80.5
Westport	41	23	77

Skye case study sites

NMRSNAME	CLASSSUB	CANMORE ID	PARISH	NGRE	NGRN	X	Y	COUNTY_NAME	DISTRICT_NAME	AREA	ALTITUDE	CONSTRUCTION	URL	OUTWORKS	VITRIFICATION	COMPLEX ARCHITECTURE	SHAPE
CREAG NAM MANN, SKYE	FORT	11314	SNIZORT	4021	5552	140210	855520	INVERNESS-SHIRE	SKYE AND LOCHALSH	2570	85	S	http://canmore.rcahms.gov.uk/en/site/11314/				
DUN ADHAMH, SKYE	FORT	11326	SNIZORT	4103	5464	141030	854640	INVERNESS-SHIRE	SKYE AND LOCHALSH	420	90	B	http://canmore.rcahms.gov.uk/en/site/11326/				
DUN CRUINN, SKYE	FORT	11332	SNIZORT	4108	5185	141080	851850	INVERNESS-SHIRE	SKYE AND LOCHALSH	2220	60	S	http://canmore.rcahms.gov.uk/en/site/11332/				
DUN DEARG, VALTOS, SKYE	FORT	11533	KILMUIR	5137	6430	151370	864300	INVERNESS-SHIRE	SKYE AND LOCHALSH	2671	80	S	http://canmore.rcahms.gov.uk/en/site/11533/				
DUN MARAIG, SKYE	FORT	11133	SNIZORT	3769	5915	137690	859150	INVERNESS-SHIRE	SKYE AND LOCHALSH	810	2	S	http://canmore.rcahms.gov.uk/en/site/11133/				
DUN SANTAVAIG, SKYE	FORT	11123	SNIZORT	3822	5720	138220	857200	INVERNESS-SHIRE	SKYE AND LOCHALSH	7200	36	S	http://canmore.rcahms.gov.uk/en/site/11123/				
DUN SKUDIBURGH, SKYE	FORT	11195	KILMUIR	3740	6472	137400	864720	INVERNESS-SHIRE	SKYE AND LOCHALSH	3825	61	S	http://canmore.rcahms.gov.uk/en/site/11195/		Y		
DUN VALLERAIN, SKYE	FORT	11339	KILMUIR	4647	6943	146470	869430	INVERNESS-SHIRE	SKYE AND LOCHALSH	770	160	S	http://canmore.rcahms.gov.uk/en/site/11339/				
RIGG, SKYE	PROMONTORY FORT	74714	SNIZORT	5237	5790	152370	857900	INVERNESS-SHIRE	SKYE AND LOCHALSH	300	15	S	http://canmore.rcahms.gov.uk/en/site/74714/				
SKYE, ANNAIT, BAY RIVER	FORT	10918	DUIRINISH	272	527	127200	852700	INVERNESS-SHIRE	SKYE AND LOCHALSH	6500	80	S	http://canmore.rcahms.gov.uk/en/site/10918/				
SKYE, DUN BEAG, BALMEANACH, STAFFIN	FORT	11351	KILMUIR	4607	6827	146070	868270	INVERNESS-SHIRE	SKYE AND LOCHALSH	508	170	S	http://canmore.rcahms.gov.uk/en/site/11351/				
SKYE, DUN EYRE	FORT	11334	SNIZORT	4210	5352	142100	853520	INVERNESS-SHIRE	SKYE AND LOCHALSH	590	130	S	http://canmore.rcahms.gov.uk/en/site/11334/				
SKYE, DUN GRIANAN, TOTE	FORT	11516	SNIZORT	5222	5982	152220	859820	INVERNESS-SHIRE	SKYE AND LOCHALSH	260	90	S	http://canmore.rcahms.gov.uk/en/site/11516/				
SKYE, DUN MOR, STRUANMORE	FORT	11063	BRACADALE	3399	3905	133990	839050	INVERNESS-SHIRE	SKYE AND LOCHALSH	2625	105	S	http://canmore.rcahms.gov.uk/en/site/11063/				
SKYE, DUN NA H'AIRDE, GRESHORNISH POINT	FORT	11131	DUIRINISH	3507	5577	135070	855770	INVERNESS-SHIRE	SKYE AND LOCHALSH	900	10	S	http://canmore.rcahms.gov.uk/en/site/11131/				
SKYE, DUN TAIMH	FORT	11049	BRACADALE	3630	3664	136300	836640	INVERNESS-SHIRE	SKYE AND LOCHALSH	1020	140	S	http://canmore.rcahms.gov.uk/en/site/11049/				
SKYE, DUN VLARGVEG	FORT	11481	PORTREE	5179	3690	151790	836900	INVERNESS-SHIRE	SKYE AND LOCHALSH	260	20	S	http://canmore.rcahms.gov.uk/en/site/11481/				
SKYE, MEALL AN DUNA, GRESHORNISH	FORT	11151	DUIRINISH	3368	5408	133680	854080	INVERNESS-SHIRE	SKYE AND LOCHALSH	458	50	S	http://canmore.rcahms.gov.uk/en/site/11151/				
SKYE, PORTEE, DUN GERASHADER	FORT	11271	PORTREE	4892	4527	148920	845270	INVERNESS-SHIRE	SKYE AND LOCHALSH	1500	110	S	http://canmore.rcahms.gov.uk/en/site/11271/				
SKYE, SGOIR BEAG	PROMONTORY FORT	71564	DUIRINISH	2249	6151	122490	861510	INVERNESS-SHIRE	SKYE AND LOCHALSH	90	30	B	http://canmore.rcahms.gov.uk/en/site/71564/				
SKYE, ULLINISH	FORT	11065	BRACADALE	3173	3740	131730	837400	INVERNESS-SHIRE	SKYE AND LOCHALSH	4350	20	S	http://canmore.rcahms.gov.uk/en/site/11065/				
AIRD, SKYE	DUN	69627	KILMUIR	4408	7553	144080	875530	INVERNESS-SHIRE	SKYE AND LOCHALSH	250	17	S	http://canmore.rcahms.gov.uk/en/site/69627/	Y			SO
BALMEANACH, SKYE	DUN	74711	KILMUIR	4656	6827	146560	868270	INVERNESS-SHIRE	SKYE AND LOCHALSH	502	91	S	http://canmore.rcahms.gov.uk/en/site/74711/				SO
CREAGAN SOILLIER, SKYE	DUN	11149	SNIZORT	3731	5378	137310	853780	INVERNESS-SHIRE	SKYE AND LOCHALSH	270	66	S	http://canmore.rcahms.gov.uk/en/site/11149/				SC
DRUIM NAN SLOCHD, SKYE	DUN	11389	KILMUIR	4635	7214	146350	872140	INVERNESS-SHIRE	SKYE AND LOCHALSH	380	111	S	http://canmore.rcahms.gov.uk/en/site/11389/			Y	SR
DUN BORVE, CUIDRACH, SKYE	DUN	11134	SNIZORT	3801	5976	138010	859760	INVERNESS-SHIRE	SKYE AND LOCHALSH	510	41	S	http://canmore.rcahms.gov.uk/en/site/11134/	Y			Irr
DUN CONNAVERN, CULNAKNOCK, SKYE	DUN	11534	KILMUIR	5085	6284	150850	862840	INVERNESS-SHIRE	SKYE AND LOCHALSH	285	141	S	http://canmore.rcahms.gov.uk/en/site/11534/				SO
DUN CRAIG, SKYE	DUN	77975	SNIZORT	3801	5862	138010	858620	INVERNESS-SHIRE	SKYE AND LOCHALSH	113	42	S	http://canmore.rcahms.gov.uk/en/site/77975/				O
DUN LIATH, SKYE	DUN	11206	KILMUIR	3598	7002	135980	870020	INVERNESS-SHIRE	SKYE AND LOCHALSH	1131	28	S	http://canmore.rcahms.gov.uk/en/site/11206/	Y		Y	SO
DUN SGALAIR, SKYE	DUN	11277	SNIZORT	4135	4826	141350	848260	INVERNESS-SHIRE	SKYE AND LOCHALSH	108	74	S	http://canmore.rcahms.gov.uk/en/site/11277/				O
LOCH LEUM NA LUIRGINN, SKYE	DUN	11360	KILMUIR	4474	6793	144740	867930	INVERNESS-SHIRE	SKYE AND LOCHALSH	500	152	S	http://canmore.rcahms.gov.uk/en/site/11360/				D
PEINDUIN, SKYE	DUN	11130	SNIZORT	3882	5770	138820	857700	INVERNESS-SHIRE	SKYE AND LOCHALSH	1216	55	S	http://canmore.rcahms.gov.uk/en/site/11130/				SO
SKYE, CNOC A'SGA	DUN	10838	DUIRINISH	2564	4475	125640	844750	INVERNESS-SHIRE	SKYE AND LOCHALSH	372	85	S	http://canmore.rcahms.gov.uk/en/site/10838/				SO
SKYE, DUN ARDTRECK	DUN	11064	BRACADALE	3350	3581	133500	835810	INVERNESS-SHIRE	SKYE AND LOCHALSH	150	24	S	http://canmore.rcahms.gov.uk/en/site/11064/	Y		Y	D
SKYE, DUN CHAICH	DUN	10836	DUIRINISH	2431	4773	124310	847730	INVERNESS-SHIRE	SKYE AND LOCHALSH	415	51	S	http://canmore.rcahms.gov.uk/en/site/10836/				D
SKYE, DUN MERKADALE	DUN	11069	BRACADALE	3898	3061	138980	830610	INVERNESS-SHIRE	SKYE AND LOCHALSH	100	119	S	http://canmore.rcahms.gov.uk/en/site/11069/	Y			SO
SKYE, DUN NEILL	DUN	10861	DUIRINISH	2814	4075	128140	840750	INVERNESS-SHIRE	SKYE AND LOCHALSH	303	11	S	http://canmore.rcahms.gov.uk/en/site/10861/	Y			O
SKYE, DUN TORVAIG	DUN	11300	PORTREE	4937	4422	149370	844220	INVERNESS-SHIRE	SKYE AND LOCHALSH	538	133	S	http://canmore.rcahms.gov.uk/en/site/11300/				SO
SKYE, DUN TOTAIG	DUN	10834	DUIRINISH	2375	4790	123750	847900	INVERNESS-SHIRE	SKYE AND LOCHALSH	181	26	S	http://canmore.rcahms.gov.uk/en/site/10834/				SO
SKYE, KRAIKNISH	DUN	11042	BRACADALE	3546	2340	135460	823400	INVERNESS-SHIRE	SKYE AND LOCHALSH	270	10	S	http://canmore.rcahms.gov.uk/en/site/11042/				SO
SKYE, STAFFIN, CARN BAN	DUN	11350	KILMUIR	4874	6825	148740	868250	INVERNESS-SHIRE	SKYE AND LOCHALSH	95	31	S	http://canmore.rcahms.gov.uk/en/site/11350/				C
TOM NA H-URAICH, SKYE	DUN	11383	KILMUIR	4506	7390	145060	873900	INVERNESS-SHIRE	SKYE AND LOCHALSH	320	94	S	http://canmore.rcahms.gov.uk/en/site/11383/				O
SKYE, ABHAINN BHAILE MHEADHONAICH	BROCH (POSSIBLE)	11114	BRACADALE	3098	4260	130980	842600	INVERNESS-SHIRE	SKYE AND LOCHALSH	192	50	S	http://canmore.rcahms.gov.uk/en/site/11114/			Y	C
SKYE, DUIRINISH, DUN FIADHAIRT	BROCH (POSSIBLE)	10925	DUIRINISH	2311	5042	123110	850420	INVERNESS-SHIRE	SKYE AND LOCHALSH	125	20	S	http://canmore.rcahms.gov.uk/en/site/10925/			Y	C
SKYE, DUN A'CHEITECHIN	BROCH (POSSIBLE)	11287	SNIZORT	4175	4785	141750	847850	INVERNESS-SHIRE	SKYE AND LOCHALSH	167	84	S	http://canmore.rcahms.gov.uk/en/site/11287/	Y			C
SKYE, DUN ARD AN T-SABHAIL	BROCH (POSSIBLE)	11076	BRACADALE	3180	3333	131800	833330	INVERNESS-SHIRE	SKYE AND LOCHALSH	191	171	S	http://canmore.rcahms.gov.uk/en/site/11076/	Y		Y	C
SKYE, DUN ARKAIG	BROCH	11113	BRACADALE	3499	4261	134990	842610	INVERNESS-SHIRE	SKYE AND LOCHALSH	175	103	S	http://canmore.rcahms.gov.uk/en/site/11113/	Y		Y	C
SKYE, DUN BEAG, STRUANMORE	BROCH	11062	BRACADALE	3395	3861	133950	838610	INVERNESS-SHIRE	SKYE AND LOCHALSH	145	81	S	http://canmore.rcahms.gov.uk/en/site/11062/			Y	C
SKYE, DUN BORERAIG	BROCH	10628	DUIRINISH	1948	5311	119480	853110	INVERNESS-SHIRE	SKYE AND LOCHALSH	148	63	S	http://canmore.rcahms.gov.uk/en/site/10628/	Y		Y	C
SKYE, DUN BORNASKITAIG	BROCH (POSSIBLE)	11208	KILMUIR	3726	7161	137260	871610	INVERNESS-SHIRE	SKYE AND LOCHALSH	170	32	S	http://canmore.rcahms.gov.uk/en/site/11208/	Y		Y	C
SKYE, DUN BORRAFIACH	BROCH	71398	DUIRINISH	2355	6371	123550	863710	INVERNESS-SHIRE	SKYE AND LOCHALSH	175	131	S	http://canmore.rcahms.gov.uk/en/site/71398/			Y	C
SKYE, DUN BORVE	BROCH (POSSIBLE)	11270	SNIZORT	4591	4772	145910	847720	INVERNESS-SHIRE	SKYE AND LOCHALSH	150	172	S	http://canmore.rcahms.gov.uk/en/site/11270/	Y			C
SKYE, DUN BORVE, GRESHORNISH	BROCH	11173	DUIRINISH	3426	5257	134260	852570	INVERNESS-SHIRE	SKYE AND LOCHALSH	87	21	S	http://canmore.rcahms.gov.uk/en/site/11173/				C
SKYE, DUN COLBOST	BROCH	10833	DUIRINISH	2055	4947	120550	849470	INVERNESS-SHIRE	SKYE AND LOCHALSH	170	100	S	http://canmore.rcahms.gov.uk/en/site/10833/	Y		Y	C
SKYE, DUN DIARMAID	BROCH (POSSIBLE)	11048	BRACADALE	3545	3816	135450	838160	INVERNESS-SHIRE	SKYE AND LOCHALSH	115	7	S	http://canmore.rcahms.gov.uk/en/site/11048/				O
SKYE, DUN EDINBAIN	BROCH (POSSIBLE)	11145	DUIRINISH	3535	5092	135350	850920	INVERNESS-SHIRE	SKYE AND LOCHALSH	200	131	S	http://canmore.rcahms.gov.uk/en/site/11145/	Y		Y	C
SKYE, DUN FEORLIG	BROCH (POSSIBLE)	10864	DUIRINISH	2993	4235	129930	842350	INVERNESS-SHIRE	SKYE AND LOCHALSH	120	3	S	http://canmore.rcahms.gov.uk/en/site/10864/				C
SKYE, DUN FLASHADER	BROCH (POSSIBLE)	11144	DUIRINISH	3511	5349	135110	853490	INVERNESS-SHIRE	SKYE AND LOCHALSH	190	53	S	http://canmore.rcahms.gov.uk/en/site/11144/	Y		Y	C
SKYE, DUN GARSIN	BROCH (POSSIBLE)	11047	BRACADALE	3609	3878	136090	838780	INVERNESS-SHIRE	SKYE AND LOCHALSH	147	64	S	http://canmore.rcahms.gov.uk/en/site/11047/	Y			C
SKYE, DUN GEARYMORE	BROCH	71392	DUIRINISH	2367	6490	123670	864900	INVERNESS-SHIRE	SKYE AND LOCHALSH	172	131	S	http://canmore.rcahms.gov.uk/en/site/71392/	Y		Y	C
SKYE, DUN HALLIN	BROCH	10905	DUIRINISH	2566	5927	125660	859270	INVERNESS-SHIRE	SKYE AND LOCHALSH	167	143	S	http://canmore.rcahms.gov.uk/en/site/10905/	Y		Y	C
SKYE, DUN OSDALE	BROCH	10832	DUIRINISH	2412	4641	124120	846410	INVERNESS-SHIRE	SKYE AND LOCHALSH	202	41	S	http://canmore.rcahms.gov.uk/en/site/10832/			Y	C
SKYE, DUN RAISABURGH	BROCH	11528	KILMUIR	5032	6427	150320	864270	INVERNESS-SHIRE	SKYE AND LOCHALSH	204	100	S	http://canmore.rcahms.gov.uk/en/site/11528/	Y		Y	C
SKYE, DUN SLEADALE	BROCH	11037	BRACADALE	3238	2920	132380	829200	INVERNESS-SHIRE	SKYE AND LOCHALSH	185	165	S	http://canmore.rcahms.gov.uk/en/site/11037/			Y	C
SKYE, DUN SULADALE	BROCH	11143	SNIZORT	3744	5255	137440	852550	INVERNESS-SHIRE	SKYE AND LOCHALSH	115	113	S	http://canmore.rcahms.gov.uk/en/site/11143/	Y		Y	C
SKYE, FLODIGARRY HOTEL	BROCH (POSSIBLE)	11388	KILMUIR	4639	7196	146390	871960	INVERNESS-SHIRE	SKYE AND LOCHALSH	198	55	S	http://canmore.rcahms.gov.uk/en/site/11388/			Y	C
SKYE, GLEN HEYSDAL	BROCH (POSSIBLE)	10805	DUIRINISH	2987	4537	129870	845370	INVERNESS-SHIRE	SKYE AND LOCHALSH	165	62	S	http://canmore.rcahms.gov.uk/en/site/10805/			Y	C
SKYE, KINGSBURGH	BROCH (POSSIBLE)	11122	SNIZORT	3891	5688	138910	856880	INVERNESS-SHIRE	SKYE AND LOCHALSH	181	39	S	http://canmore.rcahms.gov.uk/en/site/11122/			Y	C
SKYE, LOCH MEALT, DUN GRIANAN	BROCH (POSSIBLE)	11526	KILMUIR	5055	6529	150550	865290	INVERNESS-SHIRE	SKYE AND LOCHALSH	131	102	S	http://canmore.rcahms.gov.uk/en/site/11526/			Y	C

Skye land and sea cumulative viewshed

Site	Land viewshed Max points	Land viewshed Mean points	Sea viewshed Max points	Sea viewshed Mean Points
(B) Abhainn Bhaile	51	48.71	14	10.14
(B) Dun a Cheitichin	101	73.9	8	2.5
(B) Dun Ard	40	21.57	79	72.29
(B) Dun Arkaig	44	13.88	7	4.75
(B) Dun Beag Struanmore	22	14.63	61	54
(B) Dun Boreraig	37	22.13	68	54.63
(B) Dun Bornaskitaig	24	11.61	176	150.34
(B) Dun Borrafiach	9	7.67	226	169.22
(B) Dun Borve Borve	94	62.96	0	0
(B) Dun Borve Greshornish	37	35.5	1	1
(B) Dun Colbost	66	43.76	55	38.05
(B) Dun Diarmaid	5	4.2	2	0.4
(B) Dun Edinbain	65	45.88	34	18.88
(B) Dun Feorlig	16	15.5	7	5.6
(B) Dun Fiadhairt	43	30.67	5	3.17
(B) Dun Flashader	18	17.17	0	0
(B) Dun Garsin	12	5.2	31	13.66
(B) Dun Gearymore	4	3.75	128	113.69
(B) Dun Grianan	32	32	0	0
(B) Dun Hallin	37	22.64	121	87.85
(B) Dun Osdale	57	46.25	14	14
(B) Dun Raisaburgh	66	58.25	0	0
(B) Dun Sleadale	11	10.14	0	0
(B) Dun Suladale	109	53.42	63	44.78
(B) Flodigarry Hotel	7	6.43	152	147.57
(B) Glen Heysdal	21	19.29	7	7
(B) Kingsburgh N	44	21.13	62	45.13
(D) Aird	5	5	142	142
(D) Balmeanach	47	39.89	77	44.44
(D) Cnoc A'Sga	115	73.74	56	31.32
(D) Creagan Soillier	30	17.45	0	0
(D) Druim nan Slochd	26	20	93	25.93
(D) Dun Ardtreck	16	5.75	55	29.09
(D) Dun Borve	44	18.58	7	4.08

(D) Dun Chaich	68	43.36	0	0
(D) Dun Connavern	70	63.72	14	7.36
(D) Dun Craig	57	52.75	65	63
(D) Dun Cruinn	71	35.67	14	5.71
(D) Dun Merkadale	46	34.75	2	1.25
(D) Dun Neill	33	28.13	6	3.65
(D) Dun Sgalair	81	74.4	5	5
(D) Dun Skudibergh	22	11.46	202	165.28
(D) Dun Torvaig	70	41.29	12	1.89
(D) Dun Totaig	28	26	6	4.83
(D) Kraiknish	2	1.33	169	144.89
(D) Loch Leum na Luirginn	12	3.5	16	3.14
(D) Peinduin	56	34.6	63	54.34
(D) Staffin, Carn Ban	53	37.6	112	104.6
(D) Tom na hUraich	23	22.5	110	103.5
Annait	25	12.56	0	0
Creag Nam Mann	77	45.82	30	22.99
Dun Adhamh	63	47.57	45	26.63
Dun Beag Balmeanach	76	46.35	157	28.16
Dun Cruinn	71	35.67	14	5.71
Dun Dearg	75	45.15	264	83.35
Dun Eyre	85	65.48	34	27.42
Dun Gerashader	59	34.03	0	0
Dun Grianan	6	3.34	220	59.38
Dun Liath	20	10.11	286	220.55
Dun Maraig	N/A	N/A	N/A	N/A
Dun Mor	70	43.43	71	53.49
Dun na hAirde	48	24.76	34	5.99
Dun Santavaig	68	35.22	84	45.54
Dun Skudibergh	22	11.46	202	165.28
Dun Taimh	63	32.98	51	38.28
Dun Vallerain	60	28.77	227	170.29
Dun Vlargveg	9	3.95	43	33.91
Eilean Ruaridh	N/A	N/A	N/A	N/A
Meall an Duna	73	52.17	3	1.69
Sgoir Beag	5	2.59	239	204.15
Ullinish	41	19.78	59	38.6

Skye 10 km visibility

Site	% area vis	% land vis	% sites vis	% land vis Ag	% land vis non Ag	# sites vis
(B) Abhainn Bhaile	14.5	10	23.5	10	90	4
(B) Dun a Cheitichin	15	15	35	19	81	7

(B) Dun Ard	29.5	22	58	20	80	0
(B) Dun Arkaig	5.5	5	0	23.5	76.5	3
(B) Dun Beag Struanmore	19	10	21.5	15	85	3
(B) Dun Boreraig	29	20.5	27	27	73	1
(B) Dun Bornaskitaig	43	12.5	8	32	68	0
(B) Dun Borrafiach	35	5	0	21.5	78.5	5
(B) Dun Borve Borve	16.5	20	38.5	23.5	76.5	1
(B) Dun Borve Greshornish	6	6	4	21	79	7
(B) Dun Colbost	19	13	67	23.5	76.5	1
(B) Dun Diarmaid	1	1	7	50	50	2
(B) Dun Edinbain	12	10	7	15	85	2
(B) Dun Feorlig	6	3	12.5	17	83	3
(B) Dun Fiadhairt	8	8	27	19	81	2
(B) Dun Flashader	9	8	8	9	91	1
(B) Dun Garsin	5	2	8	26	74	0
(B) Dun Gearymore	47	4	0	42	58	1
(B) Dun Grianan	3	6	8	5	95	4
(B) Dun Hallin	28	16	9	21	79	6
(B) Dun Osdale	10	10	28.5	15	85	0
(B) Dun Raisaburgh	23	15	46	9	91	11
(B) Dun Sleadale	2	4	0	0	100	1
(B) Dun Suladale	25	19.5	50	15	85	2
(B) Flodigarry Hotel	26.5	2	8	19	81	3
(B) Glen Heysdal	4.5	3	10	5.5	94.5	1
(B) Kingsburgh N	19	8	13	15.5	84.5	3
(D) Aird	36	6	9	28	72	7
(D) Balmeanach	16	7.5	19	21	79	8
(D) Cnoc A'Sga	22	20	47	14	86	4
(D) Creagan Soillier	18	13.5	38	11	89	1
(D) Druim nan Slochd	39	9	31	20.5	79.5	2
(D) Dun Ardtreck	13	4	8	8	92	6
(D) Dun Borve	11	8	9	15	85	6
(D) Dun Chaich	13	12	46	19	81	10
(D) Dun Connavern	28	17	50	5	95	7
(D) Dun Craig	31	13	43.5	14.5	85.5	2
(D) Dun Cruinn	15.5	13	30.5	21	79	0
(D) Dun Merkadale	8	7.5	20	16	84	8
(D) Dun Neill	7	6.5	0	8	92	3
(D) Dun Sgalair	13	13	30	18.5	81.5	3

(D) Dun Skudibergh	46	6.5	21.5	38.2	61.8	5
(D) Dun Torvaig	19	20	43	24.5	75.5	0
(D) Dun Totaig	12.5	10	38.5	15	85	4
(D) Kraiknish	32.5	2	0	6.5	93.5	6
(D) Loch Leum na Luirginn	4	5	20	21.5	78.5	5
(D) Peinduin	25	12.5	25	16	84	1
(D) Staffin, Carn Ban	22	9.5	36	18	82	0
(D) Tom na hUraich	46	9	9	23	77	8
Annait	3	4	0	21	79	8
Creag Nam Mann	13	12	31	20	80	6
Dun Adhamh	14.5	12	33	21	79	7
Dun Beag Balmeanach	28	15	37.5	19	81	5
Dun Cruinn	15.5	13	30.5	21	79	8
Dun Dearg	54	17	38.5	10	90	3
Dun Eyre	16.5	14	33	23	77	2
Dun Gerashader	10	12.5	50	32.5	67.5	2
Dun Grianan	49	3	28.5	9.5	90.5	2
Dun Liath	61	10	33	12.5	87.5	4
Dun Maraig	19	3.5	9.5	20	80	6
Dun Mor	26	15	28.5	14.5	85.5	4
Dun na hAirde	16	10	25	16	84	3
Dun Santavaig	28.5	13.5	16	13	87	5
Dun Skudibergh	46	6.5	21.5	38.2	61.8	5
Dun Taimh	17	9.5	23	15	85	3
Dun Vallerain	37	12	33	17	83	6
Dun Vlargveg	16	8	17	13.5	86.5	6
Eilean Ruaridh	29.5	10	46	5	95	0
Meall an Duna	10	13	23	17.5	82.5	4
Sgoir Beag	35	1	0	30	70	7
Ullinish	20.5	11	20	12	88	1

Skye 5 km Visibility

Site	% area vis	% land vis	% sites vis	% land vis Ag	% land vis non Ag	Sqm ag land visible	# sites visible
(B) Abhainn Bhaile	19	13.5	33	27.5	72.5	2238364	2
(B) Dun a Cheitichin	31	31	50	26.5	73.5	6330251	3
(B) Dun Ard	28	17	67	17	83	1099547	2
(B) Dun Arkaig	14	14.5	0	25	75	2748869	0
(B) Dun Beag Struanmore	26	12	25	21	79	1429412	2
(B) Dun Boreraig	49	30	50	23.5	76.5	2693891	2
(B) Dun Bornaskitaig	41.5	25	0	51	49	3259373	0
(B) Dun Borrafiach	29	6	0	40	60	683290	0
(B) Dun Borve Borve	31	31	100	30	70	7304136	4

(B) Dun Borve Greshornish	20	21	17	23.5	76.5	3377181	1
(B) Dun Colbost	32	18	67	38.5	61.5	4146864	4
(B) Dun Diarmaid	3	3	14	54	46	942469	1
(B) Dun Edinbain	27	27.5	28.5	21	79	4241111	2
(B) Dun Feorlig	14	7	25	28.5	71.5	1044570	1
(B) Dun Fiadhairt	22.5	26	37.5	26.5	73.5	3357547	3
(B) Dun Flashader	6.5	8.5	11	12	88	536029	1
(B) Dun Garsin	7	5	14	38	62	1319457	1
(B) Dun Gearymore	36	7	0	42	58	706852	0
(B) Dun Grianan	4	8	20	16	84	455527	1
(B) Dun Hallin	28	16	0	14.5	85.5	879638	0
(B) Dun Osdale	20	20.5	67	17.5	82.5	2513251	4
(B) Dun Raisaburgh	17	22	20	8	92	801099	1
(B) Dun Sleadale	7	12	0	0	100	0	0
(B) Dun Suladale	20	19	50	27	73	3298642	8
(B) Flodigarry Hotel	26.5	4	11	25	75	416257	1
(B) Glen Heysdal	11	10	25	4.5	95.5	302376	1
(B) Kingsburgh N	19.5	13	23	28	72	1990966	3
(D) Aird	40	14	33	39	61	1570782	1
(D) Balmeanach	23	17.5	12.5	25.5	74.5	2709599	1
(D) Cnoc A'Sga	37	39	60	12.3	87.7	3138422	3
(D) Creagan Soillier	13.5	12	44.5	29	71	1908500	8
(D) Druim nan Slochd	40	15	22	20	80	1256626	2
(D) Dun Ardtreck	19	8	20	11	89	447673	1
(D) Dun Borve	15	9	20	11	89	353426	2
(D) Dun Chaich	29	31	83	23	77	4783031	5
(D) Dun Connavern	18	26	25	2	98	212056	1
(D) Dun Craig	40.5	17.5	67	24.5	75.5	1908500	6
(D) Dun Cruinn	37.5	33	60	31	69	7215780	6
(D) Dun Merkadale	19	16	N/A	18	82	2238364	0
(D) Dun Neill	22	18	0	11	89	863930	0
(D) Dun Sgalair	26	24.5	67	33	67	5921848	4
(D) Dun Skudibergh	56.5	18	N/A	29	71	1774984	0
(D) Dun Torvaig	40	38.5	100	37.5	62.5	8010988	2
(D) Dun Totaig	27	24	67	16	84	2544667	4
(D) Kraiknish	37	8	N/A	7	93	290595	0
(D) Loch Leum na Luirginn	9	10	17	24	76	1696445	1
(D) Peinduin	30	18.5	50	30	70	2827408	5
(D) Staffin, Carn Ban	30	21	50	21	79	2591790	5
(D) Tom na hUraich	48	25	20	24.5	75.5	2261926	1

Annait	7.5	8	0	18	82	971921	0
Creag Nam Mann	15.5	18	33	26.5	73.5	2982522	0
Dun Adhamh	22	19	42	28	72	3628506	5
Dun Beag Balmeanach	34	28	67	25	75	4272527	4
Dun Cruinn	37.5	33	60	31	69	7215780	6
Dun Dearg	54.5	20	40	16	84	1284114	2
Dun Eyre	26	21.5	50	33	67	5002941	5
Dun Gerashader	23	29	100	37	63	6322398	2
Dun Grianan	49	3	50	31	69	384842	2
Dun Liath	67	19	0	18	82	789318	0
Dun Maraig	21	1.5	25	53	47	329864	2
Dun Mor	31	17.5	25	20	80	1947770	2
Dun na hAirde	21	11	31	43	57	1979185	4
Dun Santavaig	34.5	19.5	33	27.5	72.5	2709599	4
Dun Skudibergh	56.5	18	N/A	29	71	1774984	0
Dun Taimh	25	21	50	17	83	2356173	3
Dun Vallerain	35	19	37.5	19	81	2473982	3
Dun Vlargveg	33	13	100	22	78	1425485	1
Eilean Ruaridh	56	14	100	9	91	219909	1
Meall an Duna	20	24	33	32	68	4241111	2
Sgoir Beag	35	3.5	0	30	70	274887	0
Ullinish	35.5	19	28.5	25.5	74.5	1812290	2

Skye 1 km visibility

Site	% area vis	% land vis	% sites vis	% land vis Ag	% land vis non Ag	Sqm ag land visible	# sites visible
(B) Abhainn Bhaile	48	35	N/A	70	30	573101	0
(B) Dun a Cheitichin	60	60	0	70	30	1319640	0
(B) Dun Ard	32	34	0	0	100	0	0
(B) Dun Arkaig	57	57	N/A	50	50	895470	0
(B) Dun Beag Struanmore	29	29	100	34	66	309801	1
(B) Dun Boreraig	62	38.5	N/A	80.5	19.5	487010	0
(B) Dun Bornaskitaig	56.5	61	N/A	95	5	692340	0
(B) Dun Borrafiach	33	38	N/A	57	43	591010	0
(B) Dun Borve Borve	43	43	N/A	45	55	607977	0
(B) Dun Borve Greshornish	65	51	N/A	40	60	265499	0
(B) Dun Colbost	30	32	N/A	42	58	386466	0
(B) Dun Diarmaid	41	33.5	100	86	14	753609	1
(B) Dun Edinbain	51	51	N/A	52.5	47.5	833258	0
(B) Dun Feorlig	45	18	N/A	53.5	46.5	183807	0
(B) Dun Fiadhairt	28	24	100	94.5	5.5	211142	1

(B) Dun Flashader	7	9	N/A	57	43	125366	0
(B) Dun Garsin	36.5	31	100	62	38	561947	1
(B) Dun Gearymore	33.5	42	N/A	41.5	58.5	436817	0
(B) Dun Grianan	32	33	0	72.5	27.5	482611	0
(B) Dun Hallin	49	49	N/A	16.5	83.5	254031	0
(B) Dun Osdale	52.5	49	N/A	15	85	206194	0
(B) Dun Raisaburgh	24	24	0	23	77	173438	0
(B) Dun Sleadale	40	40.5	0	0	100	0	0
(B) Dun Suladale	23	23	0	5	95	36133	0
(B) Flodigarry Hotel	30	20	0	79	21	362901	0
(B) Glen Heysdal	47	47	N/A	0	100	0	0
(B) Kingsburgh N	47.5	49	100	95.5	4.5	1201422	2
(D) Aird	48.5	24	N/A	76	24	320013	0
(D) Balmeanach	36	36	0	98	2	1108498	0
(D) Cnoc A'Sga	68	68	N/A	2	98	42731	0
(D) Creagan Soillier	19	19	N/A	62	38	370128	0
(D) Druim nan Slochd	60	54	100	43	57	509004	1
(D) Dun Ardtreck	48	15	N/A	0	100	0	0
(D) Dun Borve	26	26	100	41	59	277753	1
(D) Dun Chaich	63.5	63	100	45	55	678358	1
(D) Dun Connavern	15	15	N/A	41	59	193233	0
(D) Dun Craig	54	36	100	45	55	288436	1
(D) Dun Cruinn	63	51	100	61.5	38.5	554249	1
(D) Dun Merkadale	32	33	N/A	25.5	74.5	241306	0
(D) Dun Neill	43.5	11.5	N/A	100	N/A	88840	0
(D) Dun Sgalair	42	38	100	84	16	943543	1
(D) Dun Skudibergh	87	69	N/A	47	53	437366	0
(D) Dun Torvaig	28	40.5	N/A	65	35	571844	0
(D) Dun Totaig	44	49	100	25	75	317970	1
(D) Kraiknish	57	2	N/A	0	100	0	0
(D) Loch Leum na Luirginn	51	51	N/A	30	70	480726	0
(D) Peinduin	71	70	100	55	45	1003869	2
(D) Staffin, Carn Ban	51	42.5	N/A	39	61	304460	0
(D) Tom na hUraich	47	36	N/A	46.5	53.5	354418	0
Annait	44.5	44.5	N/A	15	85	209729	0
Creag Nam Mann	38	38	N/A	24	76	286550	0
Dun Adhamh	40	40	N/A	0	100	0	0
Dun Beag Balmeanach	57	57	100	86	14	1540208	1
Dun Cruinn	63	51	100	61.5	38.5	554249	1
Dun Dearg	75	61	N/A	24	76	400605	0
Dun Eyre	44	44	N/A	64.5	35.5	891700	0
Dun Gerashader	54	54	N/A	75	25	1272510	0

Dun Grianan	54	13.5	N/A	0	100	0	0
Dun Liath	69	33	N/A	0	100	0	0
Dun Maraig	35.5	22	50	16.5	83.5	278853	1
Dun Mor	27	27	100	27	73	229052	1
Dun na hAirde	62.5	17	N/A	100	0	147281	0
Dun Santavaig	81	59	100	83	17	661705	2
Dun Skudibergh	87	69	N/A	47	53	437366	0
Dun Taimh	35	37.5	N/A	56	44	604835	0
Dun Vallerain	37	38	N/A	45	55	523143	0
Dun Vlargveg	49	7	N/A	91	9	92375	0
Eilean Ruaridh	78	16	100	0	100	0	1
Meall an Duna	24	33	N/A	35	65	263928	0
Sgoir Beag	45	20	N/A	80	20	289850	0
Ullinish	71	43	N/A	60	40	256544	0

Skye 10 km Proximity

Site	# sites	% of land Ag	% of land non Ag
(B) Abhainn Bhaile	17	13.5	86.5
(B) Dun a Cheitichin	20	16	84
(B) Dun Ard	12	15	85
(B) Dun Arkaig	17	15	85
(B) Dun Beag Struanmore	14	12.5	87.5
(B) Dun Boreraig	11	20.5	79.5
(B) Dun Bornaskitaig	12	23	77
(B) Dun Borrafiach	5	28	72
(B) Dun Borve Borve	13	13	87
(B) Dun Borve Greshornish	25	16	84
(B) Dun Colbost	10	15.5	84.5
(B) Dun Diarmaid	14	13	87
(B) Dun Edinbain	27	18.5	81.5
(B) Dun Feorlig	16	14	86
(B) Dun Fiadhairt	11	15	85
(B) Dun Flashader	25	19	81
(B) Dun Garsin	13	12.5	87.5
(B) Dun Gearymore	4	31	69
(B) Dun Grianan	13	8.5	91.5
(B) Dun Hallin	11	24.5	75.5
(B) Dun Osdale	14	14	86
(B) Dun Raisaburgh	13	8	92
(B) Dun Sleadale	9	11	89
(B) Dun Suladale	22	17	83
(B) Flodigarry Hotel	13	19	81
(B) Glen Heysdal	20	15	85
(B) Kingsburgh N	23	19	81
(D) Aird	11	23	77
(D) Balmeanach	16	17	83
(D) Cnoc A'Sga	15	15	85
(D) Creagan Soillier	21	17.5	82.5
(D) Druim nan Slochd	13	19	81
(D) Dun Ardtreck	8	14	86
(D) Dun Borve	23	18	82
(D) Dun Chaich	13	14.5	85.5
(D) Dun Connavern	12	8	92
(D) Dun Craig	23	19	91
(D) Dun Cruinn	23	16	84
(D) Dun Merkadale	10	7	93

(D) Dun Neill	16	14	86
(D) Dun Sgalair	27	16	85
(D) Dun Skudibergh	14	19	81
(D) Dun Torvaig	7	13.5	86.5
(D) Dun Totaig	13	14.5	85.5
(D) Kraiknish	3	5.5	94.5
(D) Loch Leum na Luirginn	20	18	82
(D) Peinduin	25	18.5	81.5
(D) Staffin, Carn Ban	14	14	86
(D) Tom na hUraich	11	20	80
Annait	19	20.5	79.5
Creag Nam Mann	26	17.5	82.5
Dun Adhamh	24	17	83.5
Dun Beag Balmeanach	16	17	83
Dun Cruinn	23	16	84
Dun Dearg	13	8.5	91.5
Dun Eyre	24	16.5	83
Dun Gerashader	6	14	86
Dun Grianan	7	6	94
Dun Liath	6	23	77
Dun Maraig	21	19	81
Dun Mor	14	12	88
Dun na hAirde	25	21	79
Dun Santavaig	25	19	68
Dun Skudibergh	14	19	81
Dun Taimh	23	12	88
Dun Vallerain	15	18	82
Dun Vlargveg	17	9.5	90.5
Eilean Ruaridh	13	8	92
Meall an Duna	26	19.5	80.5
Sgoir Beag	8	26	74
Ullinish	20	13	87

Skye 5 km proximity

Site	# sites	% of land Ag	% of land non Ag	Sqm of Ag land
(B) Abhainn Bhaile	6	23	77	13351647
(B) Dun a Cheitichin	6	22	78	16493211
(B) Dun Ard	3	4.5	95.5	1570782
(B) Dun Arkaig	5	18	82	13351647
(B) Dun Beag Struanmore	8	26	74	14529734
(B) Dun Boreraig	4	28.5	71.5	11780865
(B) Dun Bornaskitaig	1	32	68	8639301
(B) Dun Borrafiach	4	30.5	69.5	7853910
(B) Dun Borve Borve	4	22	78	17278602
(B) Dun Borve Greshornish	6	21	79	13351647
(B) Dun Colbost	6	27	73	16021976
(B) Dun Diarmaid	7	20.5	79.5	13351647
(B) Dun Edinbain	7	21	79	15315125
(B) Dun Feorlig	4	24	76	12566256
(B) Dun Fiadhairt	8	31	69	14922429
(B) Dun Flashader	9	27	73	14922429
(B) Dun Garsin	7	19.5	80.5	13351647
(B) Dun Gearymore	3	27.5	82.5	6283128
(B) Dun Grianan	5	19	81	7853910
(B) Dun Hallin	3	28.5	71.5	11780865
(B) Dun Osdale	6	17.5	82.5	11780865
(B) Dun Raisaburgh	5	14	86	6675824
(B) Dun Sleadale	1	0	100	0

(B) Dun Suladale	16	33	67	20420166
(B) Flodigarry Hotel	9	26	74	10602779
(B) Glen Heysdal	4	15.5	84.5	10210083
(B) Kingsburgh N	13	31	69	16885907
(D) Aird	3	25	75	6675824
(D) Balmeanach	8	13	87	7853910
(D) Cnoc A'Sga	5	15.5	84.5	10210083
(D) Creagan Soillier	18	35.5	64.5	20027471
(D) Druim nan Slochd	9	27	73	10602779
(D) Dun Ardtreck	5	20	80	10210083
(D) Dun Borve	10	31	69	12566256
(D) Dun Chaich	6	17.5	82.5	11780865
(D) Dun Connavern	4	11	89	5497737
(D) Dun Craig	9	32	68	13744343
(D) Dun Cruinn	10	24	76	17278602
(D) Dun Merkadale	0	12.5	87.5	8639301
(D) Dun Neill	5	21.5	78.5	9424692
(D) Dun Sgalair	6	22	78	16493211
(D) Dun Skudibergh	0	26	74	9817388
(D) Dun Torvaig	2	21	79	11780865
(D) Dun Totaig	6	18	82	11780865
(D) Kraiknish	0	4	96	1570782
(D) Loch Leum na Luirginn	6	10	90	7068519
(D) Peinduin	10	30	70	15707820
(D) Staffin, Carn Ban	10	20.5	79.5	8639301
(D) Tom na hUraich	5	19	81	7068519
Annait	3	15.5	84.5	10995474
Creag Nam Mann	0	25	75	16100516
Dun Adhamh	12	26	74	17671298
Dun Beag Balmeanach	6	12	88	7068519
Dun Cruinn	10	24	76	17278602
Dun Dearg	5	15	85	5497737
Dun Eyre	10	24.5	75.5	16885907
Dun Gerashader	2	19	81	10995474
Dun Grianan	4	6	94	2356173
Dun Liath	1	40	60	9031997
Dun Maraig	8	33	67	12566256
Dun Mor	8	28.5	71.5	16100516
Dun na hAirde	13	35	65	14137038
Dun Santavaig	12	33.5	66.5	16493211
Dun Skudibergh	0	26	74	9817388
Dun Taimh	6	16.5	83.5	10995474
Dun Vallerain	8	5	95	7853910
Dun Vlargveg	1	18	82	9424692
Eilean Ruaridh	1	6	94	2356173
Meall an Duna	6	25	75	13351647
Sgoir Beag	4	32	68	9424692
Ullinish	7	27.5	72.5	10445700

Skye 1 km Proximity

Site	# sites	% of land Ag	% of land non Ag	Sqm of Ag land
(B) Abhainn Bhaile	0	42	58	1005440
(B) Dun a Cheitichin	1	68	42	2136560
(B) Dun Ard	0	0	100	0
(B) Dun Arkaig	0	40	60	1256800
(B) Dun Beag Struanmore	1	50	50	1571000
(B) Dun Boreraig	0	89	11	1413900
(B) Dun Bornaskitaig	0	94	6	1099700

(B) Dun Borrafiach	0	38	62	1036860
(B) Dun Borve Borve	0	29	71	911180
(B) Dun Borve Greshornish	0	36	64	691240
(B) Dun Colbost	0	35	65	989730
(B) Dun Diarmaid	1	63	37	1633840
(B) Dun Edinbain	0	51	49	1602420
(B) Dun Feorlig	0	44	56	785500
(B) Dun Fiadhairt	1	94.7	5.3	886044
(B) Dun Flashader	0	52.5	47.5	1193960
(B) Dun Garsin	1	53	47	1523870
(B) Dun Gearymore	0	17	83	1413900
(B) Dun Grianan	0	50	50	1005440
(B) Dun Hallin	0	26	74	816920
(B) Dun Osdale	0	9	91	251360
(B) Dun Raisaburgh	0	22.5	77.5	691240
(B) Dun Sleadale	0	0	100	0
(B) Dun Suladale	0	12	88	377040
(B) Flodigarry Hotel	1	32	68	722660
(B) Glen Heysdal	0	0	100	0
(B) Kingsburgh N	2	78	22	2010880
(D) Aird	0	35	65	612690
(D) Balmeanach	1	91	9	2827800
(D) Cnoc A'Sga	0	2	98	62840
(D) Creagan Soillier	0	51.5	48.5	1571000
(D) Druim nan Slochd	1	27	73	596980
(D) Dun Ardtreck	0	0	100	0
(D) Dun Borve	1	36	64	942600
(D) Dun Chaich	1	45	55	1068280
(D) Dun Connavern	0	25	75	785500
(D) Dun Craig	1	27	73	487010
(D) Dun Cruinn	1	37	63	644110
(D) Dun Merkadale	0	47	53	1382480
(D) Dun Neill	0	100	0	754080
(D) Dun Sgalair	1	69.5	30.5	2042300
(D) Dun Skudibergh	0	35	65	471300
(D) Dun Torvaig	0	49	51	1068280
(D) Dun Totaig	1	26	74	659820
(D) Kraiknish	0	0	100	0
(D) Loch Leum na Luirginn	0	28	72	879760
(D) Peinduin	2	50	50	1288220
(D) Staffin, Carn Ban	0	31.5	68.5	565560
(D) Tom na hUraich	0	43	57	911180
Annait	0	16.5	83.5	518430
Creag Nam Mann	0	25	75	785500
Dun Adhamh	0	0	100	0
Dun Beag Balmeanach	1	76	24	2387920
Dun Cruinn	1	37	63	644110
Dun Dearg	0	48	52	816920
Dun Eyre	0	45	55	1413900
Dun Gerashader	0	63.5	36.5	1995170
Dun Grianan	0	0	100	0
Dun Liath	0	12	88	141390
Dun Maraig	2	36.5	63.5	628400
Dun Mor	1	40	60	1256800
Dun na hAirde	0	83.5	16.5	722660
Dun Santavaig	2	83	17	1131120
Dun Skudibergh	0	35	65	471300
Dun Taimh	0	56	44	1602420
Dun Vallerain	0	27.5	72.5	848340
Dun Vlargveg	0	92	8	1413900

Eilean Ruaridh	1	0	100	0
Meall an Duna	0	41	59	942600
Sgoir Beag	0	80	20	1461030
Ullinish	0	70	30	691240

Skye 10 km Relative Height

Site	Site Height m. OD	Mean Height of landscape m. OD	% land below	% land above
(B) Abhainn Bhaile	50	121	21	79
(B) Dun a Cheitichin	84	158	26	74
(B) Dun Ard	171	141	67	33
(B) Dun Arkaig	103	118	45	55
(B) Dun Beag Struanmore	81	134	26.5	73.5
(B) Dun Boreraig	63	133	24	76
(B) Dun Bornaskitaig	32	148	14	86
(B) Dun Borrafiach	131	123	56	44
(B) Dun Borve Borve	172	173	60	40
(B) Dun Borve Greshornish	21	118	5	95
(B) Dun Colbost	100	135	40	60
(B) Dun Diarmaid	7	145	1	99
(B) Dun Edinbain	131	117	60	40
(B) Dun Feorlig	3	121	0.5	99.5
(B) Dun Fiadhairt	20	132	6	94
(B) Dun Flashader	53	127	17	83
(B) Dun Garsin	64	147	17	83
(B) Dun Gearymore	131	120	57	43
(B) Dun Grianan	102	206	6	91
(B) Dun Hallin	143	127	60	40
(B) Dun Osdale	41	132	17	83
(B) Dun Raisaburgh	100	217	23	77
(B) Dun Sleadale	165	158	56.5	43.5
(B) Dun Suladale	113	141	43	57
(B) Flodigarry Hotel	55	150	20	80
(B) Glen Heysdal	62	123	26	74
(B) Kingsburgh N	39	172	11	89
(D) Aird	17	139	7.5	92.5
(D) Balmeanach	91	166	35	65
(D) Cnoc A'Sga	85	127	37	63
(D) Creagan Soillier	66	147	22	78
(D) Druim nan Slochd	111	149	51	49
(D) Dun Ardtreck	24	143	7	93
(D) Dun Borve	41	173	15	85
(D) Dun Chaich	51	132	20	80
(D) Dun Connavern	141	227	35.5	64.5
(D) Dun Craig	42	171	14	86
(D) Dun Cruinn	71	170	24	76
(D) Dun Merkadale	119	194	29	71
(D) Dun Neill	11	120	3	97
(D) Dun Sgalair	74	155	23.5	76.5
(D) Dun Skudibergh	61	179	20	80
(D) Dun Torvaig	133	163	43	57
(D) Dun Totaig	26	133	9	91
(D) Kraiknish	10	206	2	98
(D) Loch Leum na Luirginn	152	165	58	42
(D) Peinduin	55	173	19	81
(D) Staffin, Carn Ban	31	175	5	95
(D) Tom na hUraich	94	143	47	53
Annait	64	114	29.5	70.5
Creag Nam Mann	82	180	28.5	71.5

Dun Adhamh	101	179	34	66
Dun Beag Balmeanach	173	165	63	37
Dun Cruinn	71	170	24	76
Dun Dearg	101	215	25	75
Dun Eyre	137	177	44	56
Dun Gerashader	110	167	35	65
Dun Grianan	102	220	23.5	76.5
Dun Liath	28	152	11.5	88.5
Dun Maraig	5	170	1	99
Dun Mor	117	132	43	57
Dun na hAirde	15	133	4	96
Dun Santavaig	37	170	10	90
Dun Skudibergh	61	179	20	80
Dun Taimh	148	154	50	50
Dun Vallerain	168	160	64	36
Dun Vlargveg	17	168	3	97
Eilean Ruaridh	9	128	2	98
Meall an Duna	48	122	15	85
Sgoir Beag	37	129	11	89
Ullinish	21	132	6.5	93.5

Skye 5 km Relative Height

Site	**Site Height m. OD**	**Mean Height of landscape m. OD**	**% land below**	**% land above**
(B) Abhainn Bhaile	50	76	39	61
(B) Dun a Cheitichin	84	106	42.5	57.5
(B) Dun Ard	171	129	71.5	28.5
(B) Dun Arkaig	103	120	40	60
(B) Dun Beag Struanmore	81	87	52	48
(B) Dun Boreraig	63	108	34	66
(B) Dun Bornaskitaig	32	84	26	74
(B) Dun Borrafiach	131	124	56	44
(B) Dun Borve Borve	172	150	63	37
(B) Dun Borve Greshornish	21	106	6	94
(B) Dun Colbost	100	117	46	54
(B) Dun Diarmaid	7	145	1.5	98.5
(B) Dun Edinbain	131	107	65.5	34.5
(B) Dun Feorlig	3	62	1	99
(B) Dun Fiadhairt	20	102	14	86
(B) Dun Flashader	53	87	34	66
(B) Dun Garsin	64	120	27	73
(B) Dun Gearymore	131	130	51	49
(B) Dun Grianan	102	94	14	86
(B) Dun Hallin	143	129	58	42
(B) Dun Osdale	41	112	27.5	72.5
(B) Dun Raisaburgh	100	107	55.5	44.5
(B) Dun Sleadale	165	198	38	62
(B) Dun Suladale	113	76	76	24
(B) Flodigarry Hotel	55	148	26	74
(B) Glen Heysdal	62	92	41	59
(B) Kingsburgh N	39	112	20	80
(D) Aird	17	85.5	9	91
(D) Balmeanach	91	179	31	69
(D) Cnoc A'Sga	85	102	57	43
(D) Creagan Soillier	66	70	57	43
(D) Druim nan Slochd	111	148	57.5	42.5
(D) Dun Ardtreck	24	102	11	89
(D) Dun Borve	41	124	19	81

(D) Dun Chaich	51	105	32	68
(D) Dun Connavern	141	117	75.5	24.5
(D) Dun Craig	42	116	23.5	76.5
(D) Dun Cruinn	71	112	40.5	59.5
(D) Dun Merkadale	119	171	25	75
(D) Dun Neill	11	74	7	93
(D) Dun Sgalair	74	104	38	62
(D) Dun Skudibergh	61	127	31	69
(D) Dun Torvaig	133	146	51	49
(D) Dun Totaig	26	107	15	85
(D) Kraiknish	10	202	1.5	98.5
(D) Loch Leum na Luirginn	152	197	43	57
(D) Peinduin	55	123	32.5	67.5
(D) Staffin, Carn Ban	31	129	6.5	93.5
(D) Tom na hUraich	94	132	57.5	42.5
Annait	64	144	14	86
Creag Nam Mann	82	123	45	55
Dun Adhamh	101	127	51	49
Dun Beag Balmeanach	173	183	57	43
Dun Cruinn	71	112	40.5	59.5
Dun Dearg	101	91	66	34
Dun Eyre	137	142	56	44
Dun Gerashader	110	161	39	61
Dun Grianan	102	142	34	66
Dun Liath	28	74	26	74
Dun Maraig	5	114	1	99
Dun Mor	117	88	69	31
Dun na hAirde	15	69	8.5	91.5
Dun Santavaig	37	101	19	81
Dun Skudibergh	61	127	31	69
Dun Taimh	148	132	62	38
Dun Vallerain	168	169	63	37
Dun Vlargveg	17	137	4	96
Eilean Ruaridh	9	123	3	97
Meall an Duna	48	104	24	76
Sgoir Beag	37	122	8	92
Ullinish	21	66	17	83

Skye 1 km Relative Height

Site	**Site Height m. OD**	**Mean Height of landscape m. OD**	**% land below**	**% land above**
(B) Abhainn Bhaile	50	36	87	13
(B) Dun a Cheitichin	84	46	99	1
(B) Dun Ard	37	133	79	21
(B) Dun Arkaig	171	88	59	41
(B) Dun Beag Struanmore	103	64	66.5	33.5
(B) Dun Boreraig	81	45	88.5	11.5
(B) Dun Bornaskitaig	63	24	69	31
(B) Dun Borrafiach	32	132	51	49
(B) Dun Borve Borve	131	155	70	30
(B) Dun Borve Greshornish	172	33	38	62
(B) Dun Colbost	21	93	59	41
(B) Dun Diarmaid	100	65	3	97
(B) Dun Edinbain	7	97	73	27
(B) Dun Feorlig	131	24	2	98
(B) Dun Fiadhairt	3	16	68	32
(B) Dun Flashader	20	48	70	30
(B) Dun Garsin	53	71	44	56

(B) Dun Gearymore	64	121	57.5	42.5
(B) Dun Grianan	21	71	7.5	92.5
(B) Dun Hallin	131	113	82	18
(B) Dun Osdale	102	42	62	38
(B) Dun Raisaburgh	143	80	83	17
(B) Dun Sleadale	41	157	57	43
(B) Dun Suladale	100	81	91	9
(B) Flodigarry Hotel	165	79	29	71
(B) Glen Heysdal	113	65	45	55
(B) Kingsburgh N	55	31	67	33
(D) Aird	62	33	39	61
(D) Balmeanach	39	83	63	37
(D) Cnoc A'Sga	17	46.5	90	10
(D) Creagan Soillier	91	51	73	27
(D) Druim nan Slochd	85	75	87	13
(D) Dun Ardtreck	66	31	37	63
(D) Dun Borve	111	43	46	54
(D) Dun Chaich	24	23	96	4
(D) Dun Connavern	41	105	99.5	0.5
(D) Dun Craig	51	32	76.5	23.5
(D) Dun Cruinn	141	27	98	2
(D) Dun Merkadale	42	108	52	48
(D) Dun Neill	71	15	27	73
(D) Dun Sgalair	119	41	96	4
(D) Dun Skudibergh	11	71	53	47
(D) Dun Torvaig	74	84	90	10
(D) Dun Totaig	61	21	26.5	73.5
(D) Kraiknish	133	47	4.5	95.5
(D) Loch Leum na Luirginn	26	203	32	68
(D) Peinduin	10	34	81	19
(D) Staffin, Carn Ban	152	34	46	54
(D) Tom na hUraich	55	58	99.5	0.5
Annait	31	103	10	90
Creag Nam Mann	94	71	74	26
Dun Adhamh	64	88	68.5	31.5
Dun Beag Balmeanach	82	117	82	18
Dun Cruinn	101	27	98	2
Dun Dearg	173	73	91.5	8.5
Dun Eyre	71	100	73.5	26.5
Dun Gerashader	101	106	59	41
Dun Grianan	137	92	63.5	36.5
Dun Liath	110	34	43	57
Dun Maraig	102	32	3.5	96.5
Dun Mor	28	80	88	12
Dun na hAirde	5	33	18	82
Dun Santavaig	117	20	85	15
Dun Skudibergh	15	71	53	47
Dun Taimh	37	104	82	18
Dun Vallerain	61	140	66.5	33.5
Dun Vlargveg	148	56	8	92
Eilean Ruaridh	168	12	38.5	61.5
Meall an Duna	17	37	72	28
Sgoir Beag	9	57	20.5	79.5
Ullinish	48	20	60	40

Skye 200 m Relative Height

Site	Site Height m. OD	Mean Height of landscape m. OD	% land below	% land above
(B) Abhainn Bhaile	50	38	77	23
(B) Dun a Cheitichin	84	61	100	0
(B) Dun Ard	37	142	99	1
(B) Dun Arkaig	171	88	93	7
(B) Dun Beag Struanmore	103	68	94.5	5.5
(B) Dun Boreraig	81	48	83.5	16.5
(B) Dun Bornaskitaig	63	18	98.5	1.5
(B) Dun Borrafiach	32	125	61	39
(B) Dun Borve Borve	131	164	67.5	32.5
(B) Dun Borve Greshornish	172	14	100	0
(B) Dun Colbost	21	86	99.7	0.3
(B) Dun Diarmaid	100	18	16	84
(B) Dun Edinbain	7	119	80	20
(B) Dun Feorlig	131	11	13	87
(B) Dun Fiadhairt	3	14	87	13
(B) Dun Flashader	20	52	63	37
(B) Dun Garsin	53	42	81	19
(B) Dun Gearymore	64	120	92	8
(B) Dun Grianan	21	58	30	70
(B) Dun Hallin	131	130	97	3
(B) Dun Osdale	102	32	81	19
(B) Dun Raisaburgh	143	92	85	15
(B) Dun Sleadale	41	160	74.5	25.5
(B) Dun Suladale	100	99	100	0
(B) Flodigarry Hotel	165	57	51	49
(B) Glen Heysdal	113	56	58	42
(B) Kingsburgh N	55	27	92.5	7.5
(D) Aird	62	27	15	85
(D) Balmeanach	39	80	76.5	23.5
(D) Cnoc A'Sga	17	62	100	0
(D) Creagan Soillier	91	60	76	24
(D) Druim nan Slochd	85	80	92	8
(D) Dun Ardtreck	66	25	37.5	62.5
(D) Dun Borve	111	30	87	13
(D) Dun Chaich	24	36	97	3
(D) Dun Connavern	41	132	86	14
(D) Dun Craig	51	25	100	0
(D) Dun Cruinn	141	46	100	0
(D) Dun Merkadale	42	106	89	11
(D) Dun Neill	71	16	19	81
(D) Dun Sgalair	119	58	96.5	3.5
(D) Dun Skudibergh	11	23	100	0
(D) Dun Torvaig	74	117	95	5
(D) Dun Totaig	61	25	66	34
(D) Kraiknish	133	16	31	69
(D) Loch Leum na Luirginn	26	143	79.5	20.5
(D) Peinduin	10	31	100	0
(D) Staffin, Carn Ban	152	25	76	24
(D) Tom na hUraich	55	72	94	6
Annait	31	62	63	37
Creag Nam Mann	94	71	99.7	0.3
Dun Adhamh	64	87	100	0
Dun Beag Balmeanach	82	138	100	0
Dun Cruinn	101	46	100	0
Dun Dearg	173	69	100	0
Dun Eyre	71	121	73	27

Dun Gerashader	101	90	100	0
Dun Grianan	137	85	67	33
Dun Liath	110	21	78	22
Dun Maraig	102	7	39	61
Dun Mor	28	98	95	5
Dun na hAirde	5	15	53	47
Dun Santavaig	117	20	100	0
Dun Skudibergh	15	23	100	0
Dun Taimh	37	123	95	5
Dun Vallerain	61	125	100	0
Dun Vlargveg	148	18	30	70
Eilean Ruaridh	168	0	100	0
Meall an Duna	17	34	100	0
Sgoir Beag	9	36	30.5	69.5
Ullinish	48	9	100	0

Kirkcudbrightshire case study sites

NMRSNAME	CLASSSUB	CANMORE ID	PARISH	NGRE	NGRN	X	Y	COUNTY_NAME	DISTRICT_NAME	AREA	ALTITUDE	DRYSTONE/EARTHWORK	URL	OUTWORKS	VITRIFICATION	RAMPARTS	SHAPE
CASTLE HAVEN	DUN	63623	BORGUE	59347	48270	259347	548270	KIRKCUDBRIGHTSHIRE	STEWARTRY	780	12	S	http://canmore.rcahms.gov.uk/en/site/63623/			2	
CASTLECREAVIE	DUN	64438	RERRICK	7254	4894	272540	548940	KIRKCUDBRIGHTSHIRE	STEWARTRY	1140	158	S	http://canmore.rcahms.gov.uk/en/site/64438/			1.5	
CRAIG HILL	DUN	64169	BALMAGHIE	6915	6607	269150	566070	KIRKCUDBRIGHTSHIRE	STEWARTRY	1020	140	S	http://canmore.rcahms.gov.uk/en/site/64169/			1	
DUNJARG HILL	EARTHWORK	64563	CROSSMICHAEL	7893	6555	278930	565550	KIRKCUDBRIGHTSHIRE	STEWARTRY	950	81	E	http://canmore.rcahms.gov.uk/en/site/64563/			1	
HALFERNE MOTE	EARTHWORK	64583	CROSSMICHAEL	7612	6695	276120	566950	KIRKCUDBRIGHTSHIRE	STEWARTRY	378	145	E	http://canmore.rcahms.gov.uk/en/site/64583/			1	
MOTE OF DOON, DOON HILL	EARTHWORK	64586	KIRKPATRICK DURHAM	7743	6889	277430	568890	KIRKCUDBRIGHTSHIRE	STEWARTRY	2200	112	E	http://canmore.rcahms.gov.uk/en/site/64586/			1	
MUNCRAIG	EARTHWORK	63971	BORGUE	6016	4651	260160	546510	KIRKCUDBRIGHTSHIRE	STEWARTRY	2700	53	E	http://canmore.rcahms.gov.uk/en/site/63971/			1	
SOUTHPARK	EARTHWORK	63972	BORGUE	6236	4570	262360	545700	KIRKCUDBRIGHTSHIRE	STEWARTRY	2420	62	E	http://canmore.rcahms.gov.uk/en/site/63972/			1	
TREGALLON MOTE	EARTHWORK	65749	TROQUEER	9287	7399	292870	573990	KIRKCUDBRIGHTSHIRE	NITHSDALE	5000	99	E	http://canmore.rcahms.gov.uk/en/site/65749/			1.5	
WATCH KNOWE	EARTHWORK	64774	BALMACLELLAN	7423	8643	274230	586430	KIRKCUDBRIGHTSHIRE	STEWARTRY	4100	189	E	http://canmore.rcahms.gov.uk/en/site/64774/			3	
AIRDS	SETTLEMENT	64860	RERRICK	8189	4835	281890	548350	KIRKCUDBRIGHTSHIRE	STEWARTRY	440	30		http://canmore.rcahms.gov.uk/en/site/64860/			2	P
ARGRENNAN	SETTLEMENT	77820	TONGLAND	7170	5871	271700	558710	KIRKCUDBRIGHTSHIRE	STEWARTRY	NV			http://canmore.rcahms.gov.uk/en/site/77820/			2	NV
AUCHENHAY BRIDGE	SETTLEMENT	64701	KIRKPATRICK DURHAM	7766	7706	277660	577060	KIRKCUDBRIGHTSHIRE	STEWARTRY	928			http://canmore.rcahms.gov.uk/en/site/64701/			3	SC
BARGRUG	SETTLEMENT	64976	KIRKGUNZEON	8708	6300	287080	563000	KIRKCUDBRIGHTSHIRE	STEWARTRY	693	113		http://canmore.rcahms.gov.uk/en/site/64976/			1	SC
BARNSOUL	SETTLEMENT	65012	KIRKPATRICK IRONGRAY	8739	7764	287390	577640	KIRKCUDBRIGHTSHIRE	NITHSDALE	406	106		http://canmore.rcahms.gov.uk/en/site/65012/			1	SO
BORELAND OF GIRTHON	SETTLEMENT	63701	GIRTHON	5835	5125	258350	551250	KIRKCUDBRIGHTSHIRE	STEWARTRY	3010			http://canmore.rcahms.gov.uk/en/site/63701/			1	P
CAMP HILL, DRUMCOLTRAN	SETTLEMENT	64919	KIRKGUNZEON	86429	69638	286429	569638	KIRKCUDBRIGHTSHIRE	STEWARTRY	2922	176		http://canmore.rcahms.gov.uk/en/site/64919/			1	C
CARRUCHAN, CONHUITH PLA	SETTLEMENT	65695	TROQUEER (KIRKCUDBRIG	95868	73785	295868	573785	KIRKCUDBRIGHTSHIRE	NITHSDALE	4050			http://canmore.rcahms.gov.uk/en/site/65695/			1	SO
CARRUCHAN, CONHUITH PLA	SETTLEMENT	65694	TROQUEER (KIRKCUDBRIG	95865	73798	295865	573798	KIRKCUDBRIGHTSHIRE	NITHSDALE	2043			http://canmore.rcahms.gov.uk/en/site/65694/			1	SO
CARSEGLASS	SETTLEMENT	64276	DALRY (STEWARTRY)	638	860	263800	586000	KIRKCUDBRIGHTSHIRE	STEWARTRY	11946	220		http://canmore.rcahms.gov.uk/en/site/64276/			1	Irr
CASTLECREAVIE	SETTLEMENT	64427	RERRICK	7237	4925	272370	549250	KIRKCUDBRIGHTSHIRE	STEWARTRY	1961	138		http://canmore.rcahms.gov.uk/en/site/64427/			1	SO
CRAIKNESS HILL	SETTLEMENT	236012	KIRKCUDBRIGHT	6885	4483	268850	544830	KIRKCUDBRIGHTSHIRE	STEWARTRY	209	59		http://canmore.rcahms.gov.uk/en/site/236012/			1	SC
CROCKETFORD HILL	SETTLEMENT	65040	KIRKPATRICK DURHAM	82001	72786	282001	572786	KIRKCUDBRIGHTSHIRE	STEWARTRY	277			http://canmore.rcahms.gov.uk/en/site/65040/			1	SC
DOON HILL	SETTLEMENT	258673	KIRKPATRICK IRONGRAY	8713	7723	287130	577230	KIRKCUDBRIGHTSHIRE	NITHSDALE	NV			http://canmore.rcahms.gov.uk/en/site/258673/			NV	NV
GILLFOOT MOTE	SETTLEMENT	64516	KELTON	7106	5618	271060	556180	KIRKCUDBRIGHTSHIRE	STEWARTRY	320	47		http://canmore.rcahms.gov.uk/en/site/64516/			1	C
GLENLAIR BURN	SETTLEMENT	64739	PARTON	7496	7259	274960	572590	KIRKCUDBRIGHTSHIRE	STEWARTRY	1430	121		http://canmore.rcahms.gov.uk/en/site/64739/			1	O
HARPER'S HILL	SETTLEMENT	64021	GIRTHON	6006	5724	260060	557240	KIRKCUDBRIGHTSHIRE	STEWARTRY	856	50		http://canmore.rcahms.gov.uk/en/site/64021/			1	SR
HASS	SETTLEMENT	64527	RERRICK	7662	5337	276620	553370	KIRKCUDBRIGHTSHIRE	STEWARTRY	660	121		http://canmore.rcahms.gov.uk/en/site/64527/			1	SC
KIRKBRIDE	SETTLEMENT	64539	KIRKCUDBRIGHT	7452	5413	274520	554130	KIRKCUDBRIGHTSHIRE	STEWARTRY	1751	169		http://canmore.rcahms.gov.uk/en/site/64539/			1	SO
KNOCKLEARN	SETTLEMENT	64703	BALMACLELLAN	7575	7928	275750	579280	KIRKCUDBRIGHTSHIRE	STEWARTRY	1526	167		http://canmore.rcahms.gov.uk/en/site/64703/			1	O
LANESIDE	SETTLEMENT	65717	TROQUEER (KIRKCUDBRIG	96145	72101	296145	572101	KIRKCUDBRIGHTSHIRE	NITHSDALE	2454			http://canmore.rcahms.gov.uk/en/site/65717/			1	C
LITTLE SYPLAND	SETTLEMENT	64555	KIRKCUDBRIGHT	7306	5393	273060	553930	KIRKCUDBRIGHTSHIRE	STEWARTRY	1166	121		http://canmore.rcahms.gov.uk/en/site/64555/			1	O
MANXMAN'S ROCK	SETTLEMENT	63991	BORGUE	6128	4498	261280	544980	KIRKCUDBRIGHTSHIRE	STEWARTRY	1131	12		http://canmore.rcahms.gov.uk/en/site/63991/			1	Irr/P
MCNAUGHTON'S FORT	SETTLEMENT	65010	KIRKPATRICK IRONGRAY	8735	7786	287350	577860	KIRKCUDBRIGHTSHIRE	NITHSDALE	374	115		http://canmore.rcahms.gov.uk/en/site/65010/			1	SC
MEIKLE SYPLAND	SETTLEMENT	64558	KIRKCUDBRIGHT	7092	5124	270920	551240	KIRKCUDBRIGHTSHIRE	STEWARTRY	926	126		http://canmore.rcahms.gov.uk/en/site/64558/			2	SC
MERKLAND HILL	SETTLEMENT	64222	PARTON	6891	7376	268910	573760	KIRKCUDBRIGHTSHIRE	STEWARTRY	1578	173		http://canmore.rcahms.gov.uk/en/site/64222/			2	SC
MILTON	SETTLEMENT	64407	KIRKCUDBRIGHT	7039	4706	270390	547060	KIRKCUDBRIGHTSHIRE	STEWARTRY	240	105		http://canmore.rcahms.gov.uk/en/site/64407/			1	SO
MOSSYARD	SETTLEMENT	63741	ANWOTH	54800	51750	254800	551750	KIRKCUDBRIGHTSHIRE	STEWARTRY	3848			http://canmore.rcahms.gov.uk/en/site/63741/			1	SC
MOSSYARD	SETTLEMENT	105515	ANWOTH	5467	5219	254670	552190	KIRKCUDBRIGHTSHIRE	STEWARTRY	226			http://canmore.rcahms.gov.uk/en/site/105515/			1	SC
MUIL THROUGHGATE	SETTLEMENT	258664	KIRKPATRICK IRONGRAY	8269	7996	282690	579960	KIRKCUDBRIGHTSHIRE	NITHSDALE	804			http://canmore.rcahms.gov.uk/en/site/258664/			1	SC
MULL HILL	SETTLEMENT	299528	KIRKMABRECK	10366	48272	210366	548272	KIRKCUDBRIGHTSHIRE	WIGTOWN	NV			http://canmore.rcahms.gov.uk/en/site/299528/			1	SC
MUNCRAIG HEUGH	SETTLEMENT	63970	BORGUE	6028	4615	260280	546150	KIRKCUDBRIGHTSHIRE	STEWARTRY	396	31		http://canmore.rcahms.gov.uk/en/site/63970/			1	P
NETHER HAZELFIELD	SETTLEMENT	64401	RERRICK	78589	48244	278589	548244	KIRKCUDBRIGHTSHIRE	STEWARTRY	1814	116		http://canmore.rcahms.gov.uk/en/site/64401/			2	C
NORTH MILTON	SETTLEMENT	64406	KIRKCUDBRIGHT	7100	4798	271000	547980	KIRKCUDBRIGHTSHIRE	STEWARTRY	438	91		http://canmore.rcahms.gov.uk/en/site/64406/			1	SC
PORT O' WARREN	SETTLEMENT	64894	COLVEND AND SOUTHWI	8804	5352	288040	553520	KIRKCUDBRIGHTSHIRE	STEWARTRY	415			http://canmore.rcahms.gov.uk/en/site/64894/			2	P
SEASIDE	SETTLEMENT	64914	RERRICK	8040	5082	280400	550820	KIRKCUDBRIGHTSHIRE	STEWARTRY	832	56		http://canmore.rcahms.gov.uk/en/site/64914/			1	SO
SEASIDE	SETTLEMENT	64913	RERRICK	8048	5052	280480	550520	KIRKCUDBRIGHTSHIRE	STEWARTRY	556	56		http://canmore.rcahms.gov.uk/en/site/64913/			1	SO
SPOUTY DENNANS	SETTLEMENT	64404	RERRICK	7645	4570	276450	545700	KIRKCUDBRIGHTSHIRE	STEWARTRY	869	41		http://canmore.rcahms.gov.uk/en/site/64404/			1	P
SPOUTY DENNANS	SETTLEMENT	64403	RERRICK	7634	4563	276340	545630	KIRKCUDBRIGHTSHIRE	STEWARTRY	834	42		http://canmore.rcahms.gov.uk/en/site/64403/			1	P
TORKIRRA	SETTLEMENT	64974	KIRKGUNZEON	8675	6477	286750	564770	KIRKCUDBRIGHTSHIRE	STEWARTRY	1407	78		http://canmore.rcahms.gov.uk/en/site/64974/			2	SO
WEST KIRKCARSWELL	SETTLEMENT	64449	RERRICK	7492	4949	274920	549490	KIRKCUDBRIGHTSHIRE	STEWARTRY	83	110		http://canmore.rcahms.gov.uk/en/site/64449/			1	C

NMRSNAME	CLASSSUB	CANMORE ID	PARISH	NGRE	NGRN	X	Y	COUNTY_NAME	DISTRICT_NAME	AREA	ALTITUDE	DRYSTONE/EARTHWORK	URL	OUTWORKS	VITRIFICATION	RAMPARTS	SHAPE
ARDEN	FORT	64045	TWYNHOLM	6587	5395	265870	553950	KIRKCUDBRIGHTSHIRE	STEWARTRY	500	85	B	http://canmore.rcahms.gov.uk/en/site/64045/			2	O
AUCHENHAY	FORT	64145	BORGUE	64362	52707	264362	552707	KIRKCUDBRIGHTSHIRE	STEWARTRY	N/A	134	NV	http://canmore.rcahms.gov.uk/en/site/64145/			NV	N/A
AULD KIRK OF LOCHROAN	FORT	64617	CROSSMICHAEL	7387	6913	273870	569130	KIRKCUDBRIGHTSHIRE	STEWARTRY	1538	210	S	http://canmore.rcahms.gov.uk/en/site/64617/			1	SO
BARN HEUGH	FORT	63624	BORGUE	5993	4741	259930	547410	KIRKCUDBRIGHTSHIRE	STEWARTRY	740	59	S	http://canmore.rcahms.gov.uk/en/site/63624/			3	SO
BARR HILL	FORT	64944	URR	815	693	281500	569300	KIRKCUDBRIGHTSHIRE	STEWARTRY	29555	184	S	http://canmore.rcahms.gov.uk/en/site/64944/			2	SO
BEACON HILL	FORT	65643	TERREGLES (KIRKCUDBRIG	9139	7643	291390	576430	KIRKCUDBRIGHTSHIRE	NITHSDALE	9745	212	B	http://canmore.rcahms.gov.uk/en/site/65643/			1	SC
BIG AIRDS HILL	FORT	64859	RERRICK	8147	4863	281470	548630	KIRKCUDBRIGHTSHIRE	STEWARTRY	1771	102	S	http://canmore.rcahms.gov.uk/en/site/64859/			2	SC
BORNESS BATTERIES	FORT	63990	BORGUE	61980	44660	261980	544660	KIRKCUDBRIGHTSHIRE	STEWARTRY	1363	20	E	http://canmore.rcahms.gov.uk/en/site/63990/			3	N/A
BORRON HILL	FORT	65358	KIRKBEAN	99357	57707	299357	557707	KIRKCUDBRIGHTSHIRE	NITHSDALE	4800	63	E	http://canmore.rcahms.gov.uk/en/site/65358/			2	SC
CAMP HILL	FORT	64143	GIRTHON	6188	5425	261880	554250	KIRKCUDBRIGHTSHIRE	STEWARTRY	1400	113	E	http://canmore.rcahms.gov.uk/en/site/64143/			2	SC
CAMP HILL	FORT	64960	URR	80708	65060	280708	565060	KIRKCUDBRIGHTSHIRE	STEWARTRY	1500	70	E	http://canmore.rcahms.gov.uk/en/site/64960/			2	SC
CARMINNOWS	FORT	64379	CARSPHAIRN	6064	9072	260640	590720	KIRKCUDBRIGHTSHIRE	STEWARTRY	691	155	B	http://canmore.rcahms.gov.uk/en/site/64379/			3	N/A
CARSE MOTE	FORT	64047	KIRKCUDBRIGHT	6955	5336	269550	553360	KIRKCUDBRIGHTSHIRE	STEWARTRY	1800	33	S	http://canmore.rcahms.gov.uk/en/site/64047/			2	SR
CASTLE HILL	FORT	64476	BUITTLE	7925	5891	279250	558910	KIRKCUDBRIGHTSHIRE	STEWARTRY	1052	150	S	http://canmore.rcahms.gov.uk/en/site/64476/		Y	1+	N/A
CASTLE HILL	FORT	64061	TWYNHOLM	6627	5208	266270	552080	KIRKCUDBRIGHTSHIRE	STEWARTRY	885	58	B	http://canmore.rcahms.gov.uk/en/site/64061/			1	SO
CASTLE HILL	FORT	64046	TONGLAND	6894	5442	268940	554420	KIRKCUDBRIGHTSHIRE	STEWARTRY	866	75	B	http://canmore.rcahms.gov.uk/en/site/64046/			1	O
CASTLE MUIR	FORT	64402	RERRICK	7976	4715	279760	547150	KIRKCUDBRIGHTSHIRE	STEWARTRY	1038	25	E	http://canmore.rcahms.gov.uk/en/site/64402/			1	N/A
CASTLEHILL	FORT	65740	TROQUEER (KIRKCUDBRIG	9279	7496	292790	574960	KIRKCUDBRIGHTSHIRE	NITHSDALE	3250	124	E	http://canmore.rcahms.gov.uk/en/site/65740/			3	SR
CASTLEHILL POINT, WEST BAR	FORT	64891	COLVEND AND SOUTHWI	8541	5242	285410	552420	KIRKCUDBRIGHTSHIRE	STEWARTRY	1100	31	S	http://canmore.rcahms.gov.uk/en/site/64891/			2	N/A
CASTLEYARDS	FORT	64400	RERRICK	7547	4555	275470	545550	KIRKCUDBRIGHTSHIRE	STEWARTRY	1400	30	E	http://canmore.rcahms.gov.uk/en/site/64400/			1	N/A
CONCHIETON DOON	FORT	64157	BORGUE	6348	5307	263480	553070	KIRKCUDBRIGHTSHIRE	STEWARTRY	854	134	B	http://canmore.rcahms.gov.uk/en/site/64157/			3	O
CORRA HILL	FORT	64489	KELTON	74434	55498	274434	555498	KIRKCUDBRIGHTSHIRE	STEWARTRY	841	140	S	http://canmore.rcahms.gov.uk/en/site/64489/			1	Irr
COURT HILL	FORT	64884	BUITTLE	8197	5837	281970	558370	KIRKCUDBRIGHTSHIRE	STEWARTRY	2200	153	S	http://canmore.rcahms.gov.uk/en/site/64884/			1 to 2	O
COURT KNOWE, HIGH AUCHE	FORT	63729	ANWOTH	5383	5308	253830	553080	KIRKCUDBRIGHTSHIRE	STEWARTRY	1942	110	S	http://canmore.rcahms.gov.uk/en/site/63729/			2 to 3	SO
CRAIGRAPLOCH	FORT	64463	RERRICK	7247	4400	272470	544000	KIRKCUDBRIGHTSHIRE	STEWARTRY	1957	102	B	http://canmore.rcahms.gov.uk/en/site/64463/			2 to 3	SC
CROFTS	FORT	64730	KIRKPATRICK DURHAM	7906	7485	279060	574850	KIRKCUDBRIGHTSHIRE	STEWARTRY	N/A	210	NV	http://canmore.rcahms.gov.uk/en/site/64730/			1	N/A
CROFTS MOTE	FORT	64588	CROSSMICHAEL	7432	6591	274320	565910	KIRKCUDBRIGHTSHIRE	STEWARTRY	3836	108	E	http://canmore.rcahms.gov.uk/en/site/64588/			3	SO
DOON HILL	FORT	69056	TWYNHOLM	6875	5660	268750	556600	KIRKCUDBRIGHTSHIRE	STEWARTRY	N/A	90	E	http://canmore.rcahms.gov.uk/en/site/69056/			NV	
DOON HILL, BALIG	FORT	64409	RERRICK	7191	4694	271910	546940	KIRKCUDBRIGHTSHIRE	STEWARTRY	2792	113	B	http://canmore.rcahms.gov.uk/en/site/64409/			2	C
DOON OF CARSLUITH	FORT	63378	KIRKMABRECK	4979	5444	249790	554440	KIRKCUDBRIGHTSHIRE	WIGTOWN	9414	176	S	http://canmore.rcahms.gov.uk/en/site/63378/			2	SR
DOON WOOD	FORT	63892	TWYNHOLM	6574	4883	265740	548830	KIRKCUDBRIGHTSHIRE	STEWARTRY	2900	41	E	http://canmore.rcahms.gov.uk/en/site/63892/			1	Hor
DRUMMORE CASTLE	FORT	63925	KIRKCUDBRIGHT	6879	4570	268790	545700	KIRKCUDBRIGHTSHIRE	STEWARTRY	2300	120	B	http://canmore.rcahms.gov.uk/en/site/63925/			3	SO
DUNGARRY	FORT	64526	RERRICK	7575	5360	275750	553600	KIRKCUDBRIGHTSHIRE	STEWARTRY	2006	233	S	http://canmore.rcahms.gov.uk/en/site/64526/			2	SR
DUNGUILE HILL	FORT	64482	KELTON	7734	5716	277340	557160	KIRKCUDBRIGHTSHIRE	STEWARTRY	20229	212	B	http://canmore.rcahms.gov.uk/en/site/64482/			4	SC
EAST KIRKCARSWELL	FORT	64381	RERRICK	7522	4972	275220	549720	KIRKCUDBRIGHTSHIRE	STEWARTRY	1715	142	B	http://canmore.rcahms.gov.uk/en/site/64381/			2 to 3	SO
EDGARTON MOTE	FORT	64185	BALMAGHIE	6733	6307	267330	563070	KIRKCUDBRIGHTSHIRE	STEWARTRY	1075	121	B	http://canmore.rcahms.gov.uk/en/site/64185/			2+	O
ERNAMBRIE MOTE	FORT	64584	CROSSMICHAEL	7599	6658	275990	566580	KIRKCUDBRIGHTSHIRE	STEWARTRY	373	148	E	http://canmore.rcahms.gov.uk/en/site/64584/			1 to 2	C
GIANT'S DIKE	FORT	64189	TONGLAND	6873	6065	268730	560650	KIRKCUDBRIGHTSHIRE	STEWARTRY	33571	160	S	http://canmore.rcahms.gov.uk/en/site/64189/			1	Irr
GLENGAPPOCK MOTE	FORT	64735	CROSSMICHAEL	75000	70430	275000	570430	KIRKCUDBRIGHTSHIRE	STEWARTRY	1763	164	B	http://canmore.rcahms.gov.uk/en/site/64735/			3+	SC
GLENNAP FORT	FORT	64410	RERRICK	7272	4510	272720	545100	KIRKCUDBRIGHTSHIRE	STEWARTRY	2977	87	B	http://canmore.rcahms.gov.uk/en/site/64410/			2	SO
GOLDIELEA WOOD	FORT	65730	TROQUEER (KIRKCUDBRIG	9302	7385	293020	573850	KIRKCUDBRIGHTSHIRE	NITHSDALE	3800	95	E	http://canmore.rcahms.gov.uk/en/site/65730/			2	O
HALL HILL MOTE	FORT	65648	KIRKPATRICK IRONGRAY	9059	7949	290590	579490	KIRKCUDBRIGHTSHIRE	NITHSDALE	1918	132	B	http://canmore.rcahms.gov.uk/en/site/65648/			1	SO
INGLESTON	FORT	64479	KELTON	7721	5767	277210	557670	KIRKCUDBRIGHTSHIRE	STEWARTRY	1675	115	E	http://canmore.rcahms.gov.uk/en/site/64479/			3	SO
INGLESTON MOTE	FORT	65637	KIRKPATRICK IRONGRAY	91256	78832	291256	578832	KIRKCUDBRIGHTSHIRE	NITHSDALE	2251	151	B	http://canmore.rcahms.gov.uk/en/site/65637/			2	SC
KERBERS	FORT	64484	KELTON	7774	5701	277740	557010	KIRKCUDBRIGHTSHIRE	STEWARTRY	3370	167	B	http://canmore.rcahms.gov.uk/en/site/64484/			2 to 3	SO
KIRKCHRIST MOTE	FORT	64062	TWYNHOLM	6672	5155	266720	551550	KIRKCUDBRIGHTSHIRE	STEWARTRY	2837	77	B	http://canmore.rcahms.gov.uk/en/site/64062/			1	SO
KIRKLAND FORT	FORT	64071	KIRKCUDBRIGHT	6922	5072	269220	550720	KIRKCUDBRIGHTSHIRE	STEWARTRY	750	55	E	http://canmore.rcahms.gov.uk/en/site/64071/			2	SO
LITTLE AIRDS HILL	FORT	64861	RERRICK	8207	4871	282070	548710	KIRKCUDBRIGHTSHIRE	STEWARTRY	3102	88	B	http://canmore.rcahms.gov.uk/en/site/64861/			3	SC
MARCH CLEUGH	FORT	64490	KELTON	7048	5514	270480	555140	KIRKCUDBRIGHTSHIRE	STEWARTRY	906	35	S	http://canmore.rcahms.gov.uk/en/site/64490/			1	SR
MCCULLOCH'S CASTLE	FORT	65369	KIRKBEAN	9962	5769	299620	557690	KIRKCUDBRIGHTSHIRE	NITHSDALE	254	25	B	http://canmore.rcahms.gov.uk/en/site/65369/			1	
MINNYDOW MOTE	FORT	64712	KIRKPATRICK DURHAM	7975	7098	279750	570980	KIRKCUDBRIGHTSHIRE	STEWARTRY	1758	115	B	http://canmore.rcahms.gov.uk/en/site/64712/			1	SC
MOAT HILL, MARGLEY	FORT	64711	KIRKPATRICK DURHAM	7702	7326	277020	573260	KIRKCUDBRIGHTSHIRE	STEWARTRY	861	130	B	http://canmore.rcahms.gov.uk/en/site/64711/			1	C
MOCHRUM FELL	FORT	64738	PARTON	7208	7449	272080	574490	KIRKCUDBRIGHTSHIRE	STEWARTRY	1634	252	B	http://canmore.rcahms.gov.uk/en/site/64738/		Y	3	SO
MOTE HILL	FORT	64562	CROSSMICHAEL	7706	6619	277060	566190	KIRKCUDBRIGHTSHIRE	STEWARTRY	2375	121	NV	http://canmore.rcahms.gov.uk/en/site/64562/			2 to 3	O
MOTE OF MARK	FORT	64911	COLVEND AND SOUTHWI	8450	5403	284500	554030	KIRKCUDBRIGHTSHIRE	STEWARTRY	2250	44	S	http://canmore.rcahms.gov.uk/en/site/64911/		Y	1	Irr
MOYLE HILL	FORT	64886	COLVEND AND SOUTHWI	8488	5751	284880	557510	KIRKCUDBRIGHTSHIRE	STEWARTRY	41874	151	S	http://canmore.rcahms.gov.uk/en/site/64886/			2	Irr
NETHERTOWN OF ALMORNES	FORT	64912	BUITTLE	8265	5391	282650	553910	KIRKCUDBRIGHTSHIRE	STEWARTRY	1142	95	S	http://canmore.rcahms.gov.uk/en/site/64912/			3	SO
PARLIAMENT KNOWE	FORT	63516	MINNIGAFF	4282	6610	242820	566100	KIRKCUDBRIGHTSHIRE	WIGTOWN	582	62	B	http://canmore.rcahms.gov.uk/en/site/63516/			1	SC
STROANFREGGAN CRAIG	FORT	64376	DALRY (STEWARTRY)	63700	92064	263700	592064	KIRKCUDBRIGHTSHIRE	STEWARTRY	1658	230	S	http://canmore.rcahms.gov.uk/en/site/64376/			2	SO
SUIE HILL	FORT	64525	RERRICK	76580	50810	276580	550810	KIRKCUDBRIGHTSHIRE	STEWARTRY	2102	240	S	http://canmore.rcahms.gov.uk/en/site/64525/			2	SR
'THE DOON', TWYNHOLM	FORT	64068	TWYNHOLM	6603	5438	266030	554380	KIRKCUDBRIGHTSHIRE	STEWARTRY	700	108	E	http://canmore.rcahms.gov.uk/en/site/64068/			2 to 3	SC
THE DOONS	FORT	65014	KIRKPATRICK IRONGRAY	8698	7699	286980	576990	KIRKCUDBRIGHTSHIRE	NITHSDALE	3129	153	B	http://canmore.rcahms.gov.uk/en/site/65014/			1	SC
TORKIRRA	FORT	64975	KIRKGUNZEON	8700	6447	287000	564470	KIRKCUDBRIGHTSHIRE	STEWARTRY	3333	95	B	http://canmore.rcahms.gov.uk/en/site/64975/			1	SO
TORRS HILL	FORT	64628	KELTON	77684	61530	277684	561530	KIRKCUDBRIGHTSHIRE	STEWARTRY	2100	81	E	http://canmore.rcahms.gov.uk/en/site/64628/			2	SO
TRUSTY'S HILL, ANWOTH	FORT	63641	ANWOTH	5889	5601	258890	556010	KIRKCUDBRIGHTSHIRE	STEWARTRY	2468	65	B	http://canmore.rcahms.gov.uk/en/site/63641/		Y	3+	SO
WRAITH PLANTATION	FORT	64518	RERRICK	7895	5156	278950	551560	KIRKCUDBRIGHTSHIRE	STEWARTRY	1250	60	S	http://canmore.rcahms.gov.uk/en/site/64518/			2	C

Kirkcudbrightshire Land and Sea cumulative viewshed

Site	Land viewshed Max points	Land viewshed Mean points	Sea viewshed Max points	Sea viewshed Mean Points
(D) Castle Haven	9	5	332	285
(D) Castlecreavie	46	29	38	9
(D) Craig Hill	94	59	0	0
(E) Dunjarg Hill	69	41	0	0
(E) Halferne Mote	75	51	0	0
(E) Mote of Doon	48	27	0	0
(E) Muncraig	14	7	413	155
(E) Southpark	19	10	289	122
(E) Tregallon Mote	48	20	2	1
(E) Watch Knowe	17	8	0	0
(S) Airds	0	0	545	195
(S) Bargrug	21	13	0	0
(S) Barnsoul	16	9	0	0
(S) Camp Hill Drumcoltran	91	58	0	0
(S) Carseglass	4	2	0	0
(S) Castlecreavie	43	24	52	14
(S) Craikness Hill	4	4	335	332
(S) Gilfoot Mote	9	6	0	0
(S) Glenlair Burn	18	9	0	0
(S) Harper’s Hill	26	16	9	3
(S) Hass	1	1	10	7
(S) Kirkbride	56	27	7	4
(S) Knocklearn	22	14	0	0
(S) Little Sypland	15	13	0	0
(S) Manxman’s Rock	4	2	546	377
(S) McNaughton’s Fort	15	15	0	0
(S) Meikle Sypland	63	36	29	14
(S) Merkland Hill	37	28	0	0
(S) Milton	5	3	137	16
(S) Muncraig Heugh	5	3	429	367
(S) Nether Hazelfield	10	4	234	182

(S) North Milton	1	0	0	0
(S) Seaside North	26	22	63	6
(S) Seaside South	27	17	147	110
(S) Spouty Dennans E	2	2	429	126
(S) Spouty Dennans W	3	2	429	139
(S) Torkirra	17	14	0	0
(S) West Kirkcarswell	4	3	0	0
Arden	20	11	1	0
Auld Kirk of Lochroan	143	73	0	0
Barn Heugh	28	23	382	208
Barr Hill	127	61	0	0
Beacon Hill	171	69	6	3
Big Airds Hill	41	29	599	152
Borness Batteries	6	2	513	334
Camp Hill	44	15	114	25
Camp Hill (Urr)	58	31	0	0
Carminnows	26	17	0	0
Carse Mote	23	15	8	2
Castle Hill (Buittle)	39	20	2	1
Castle Hill (Tongland)	35	25	30	23
Castle Hill (Twynholm)	16	8	0	0
Castle Muir	4	1	586	398
Castlehill (Troqueer)	119	46	0	0
Castlehill Point, West Barcloy	15	8	481	182
Castleyards	3	1	371	234
Conchieton Doon	53	29	86	42
Corra Hill	40	17	0	0
Court Hill	80	42	76	14
Court Knowe	41	24	277	224
Craigraploch	19	7	560	267
Crofts Mote	103	51	0	0
Doon Hill, Balig	5	3	175	81
Doon of Carsluith	74	54	254	149

Doon Wood	24	16	88	52
Drummore Castle	53	38	299	75
Dungarry	43	18	107	39
Dunguile Hill	108	46	35	8
East Kirkcarswell	8	4	53	16
Edgarton Mote	44	25	0	0
Ernambrie Mote	110	64	0	0
Giant’s Dyke	125	51	12	4
Glengappock Mote	48	27	0	0
Glennap Fort	5	3	324	177
Hall Hill Mote	96	46	0	0
Ingleston	70	45	0	0
Ingleston Mote	119	82	0	0
Kerbers	36	12	31	12
Kirkchrist Mote	53	26	34	8
Kirkland Fort	25	12	0	0
Little Airds Hill	33	18	617	277
March Cleugh	2	2	0	0
McCulloch’s Castle	17	7	470	443
Minnydow Mote	5	3	0	0
Mochrum Fell	65	40	0	0
Mote Hill	86	47	0	0
Mote Hill, Margley	22	15	0	0
Mote of Mark	12	6	166	101
Moyle Hill	87	28	148	40
Nethertown of Almorness	56	31	265	145
Stroanfreggan Craig	29	20	0	0
Suie Hill	49	31	354	187
The Doon, Twynholm	48	25	14	3
The Doons	51	34	0	0
Torkirra	44	20	0	0
Torrs Hill	63	43	0	0
Trusty’s Hill	48	29	43	14
Wraith Plantation	28	16	102	54

Kirkcudbrightshire 10 km Visibility

Site	% area vis (incl sea)	% land vis	% sites vis	% land vis Ag	% land vis non ag	# sites visible
(D) Castle Haven	33%	2%	9%	46	54	2
(D) Castlecreavie	12%	16%	31%	93	7	14
(D) Craig Hill	17.5%	17.5%	38%	62	38	6
(E) Dunjarg Hill	12%	12%	46%	86	14	12
(E) Halferne Mote	18%	18%	48%	89	11	11
(E) Mote of Doon	9%	9%	45%	91.5	8.5	9
(E) Muncraig	53%	14.5%	38%	81	19	8
(E) Southpark	34%	12%	27%	100	0	6
(E) Tregallon Mote	12%	11.5%	35%	61	39	8
(E) Watch Knowe	4%	4%	0%	52	48	0
(S) Airds	46%	1%	16%	100	-	4
(S) Bargrug	5.5%	6%	33%	65	35	4
(S) Barnsoul	3%	3%	19%	62.5	37.5	3
(S) Camp Hill Drumcoltran	15%	15%	44%	71.5	28.5	8
(S) Carseglass	2%	2%	0%	33	67	0
(S) Castlecreavie	10%	13%	24%	91.5	8.5	10
(S) Craikness Hill	33%	2%	3%	95.5	4.5	1
(S) Gilfoot Mote	1.6%	1.6%	0%	97.5	2.5	0
(S) Glenlair Burn	3%	3%	17%	72.5	27.5	3
(S) Harper's Hill	6%	7%	12.5%	67	33	2
(S) Hass	1%	1%	2.5%	51	49	1
(S) Kirkbride	11%	12%	19%	82	18	8
(S) Knocklearn	6%	6%	9%	33.5	66.5	1
(S) Little Sypland	3%	3%	13%	82	18	6
(S) Manxman's Rock	52%	2%	11%	100	0	2
(S) McNaughton's Fort	3%	3%	10%	67	33	3
(S) Meikle Sypland	19%	20%	33%	89	11	14
(S) Merkland Hill	8.5%	8.5%	20%	34	66	2
(S) Milton	5%	2%	16%	91	9	6
(S) Muncraig Heugh	41%	1.5%	10.5%	100	-	2
(S) Nether Hazelfield	23%	11%	27%	74	26	8
(S) North Milton	0.2%	0.4%	0%	100	0	0
(S) Seaside North	16%	14.5%	24%	80.5	19.5	8
(S) Seaside South	14%	11%	15%	75	25	5

(S) Spouty Dennans E	43.5%	1%	3.5%	88	12	1
(S) Spouty Dennans W	46.5%	2%	4%	89.5	10.5	1
(S) Torkirra	4%	4%	23%	79	21	3
(S) West Kirkcarswell	1%	1.5%	2.5%	100	0	1
Arden	3%	3.5%	12%	72	28	4
Auld Kirk of Lochroan	28.5%	28.5%	65%	71	29	13
Barn Heugh	47%	19%	43%	85	15	9
Barr Hill	28%	28%	65%	76	24	15
Beacon Hill	42%	42%	60%	81	19	18
Big Airds Hill	63%	27%	50%	80	20	15
Borness Batteries	47%	1.5%	0%	100	0	0
Camp Hill	17%	14%	30%	75	25	8
Camp Hill (Urr)	10%	10%	48%	72	28	12
Carminnows	5%	5%	0%	13.5	86.5	0
Carse Mote	5%	4.5%	5%	79	21	2
Castle Hill (Buittle)	7%	7.5%	17%	85.5	14.5	5
Castle Hill (Tongland)	10.5%	8%	23%	83	17	8
Castle Hill (Twynholm)	3%	4%	10.5%	71.5	28.5	4
Castle Muir	51%	3.5%	15%	65.5	34.5	4
Castlehill (Troqueer)	25%	25%	50%	81.5	19	12
Castlehill Point, West Barcloy	44%	10%	35%	71	29	7
Castleyards	31%	1%	3.5%	86	14	1
Conchieton Doon	17%	18%	38%	84	16	13
Corra Hill	9.5%	10%	13%	83.5	16.5	5
Court Hill	23%	22%	44%	68	32	12
Court Knowe	34%	14%	69%	98	2	9
Craigraploch	55%	13%	29%	97	3	6
Crofts Mote	16%	16%	36%	77	23	8
Doon Hill, Balig	11%	5%	14%	98	2	5
Doon of Carsluith	48%	32%	71%	68	32	5
Doon Wood	12.5%	8.5%	15%	88	12	5
Drummore Castle	44.5%	25%	53%	94.5	5.5	17
Dungarry	15%	13%	30%	80.5	19.5	14
Dunguile Hill	27%	27%	53%	84.5	15.5	20
East Kirkcarswell	3%	2%	7%	100	0	3
Edgarton Mote	9%	9%	54%	75	25	7
Ernambrie Mote	25%	25%	70%	87	13	16
Giant's Dyke	31%	31%	61%	72	28	17

Glengappock Mote	9%	9%	32%	72	28	6
Glennap Fort	25%	5%	13%	96	4	4
Hall Hill Mote	22%	22%	42%	80.5	19.5	13
Ingleston	15%	15%	27%	82	18	10
Ingleston Mote	30%	30%	52%	83.5	16.5	15
Kerbers	8%	7.5%	21%	82	18	8
Kirkchrist Mote	14.5%	13.5%	35%	84	16	14
Kirkland Fort	5%	6%	5%	78	22	2
Little Airds Hill	65%	42.5%	50%	80	20	13
March Cleugh	0.6%	0.6%	0%	95.5	4.5	0
McCulloch's Castle	48%	3%	0%	14	86	0
Minnydow Mote	1.5%	1.5%	4%	84	16	1
Mochrum Fell	18%	18%	43%	52	48	6
Mote Hill	19%	19%	61.5%	93	7	16
Mote Hill, Margley	4%	4%	16%	78	22	3
Mote of Mark	16%	5%	27%	59.5	40.5	6
Moyle Hill	31%	31%	43%	57.5	42.5	10
Nethertown of Almorness	29%	19%	35%	83	17	9
Stroanfreggan Craig	9%	9%	0%	11	89	0
Suie Hill	32%	25%	37%	85	15	16
The Doon, Twynholm	12%	13%	42%	86	14	13
The Doons	12%	12%	27%	79	21	7
Torkirra	9.5%	9.5%	33%	78	22	4
Torrs Hill	13%	13.5%	43%	83.5	16.5	13
Trusty's Hill	11%	11%	12.5%	74.5	25.5	2
Wraith Plantation	12%	9%	24%	77	23	9

Kirkcudbrightshire 5 km Visibility

Site	% area vis (incl sea)	% land vis	% sites vis	% land vis Ag	% land vis non ag	# sites visible
(D) Castle Haven	29%	3%	14%	100	0	1
(D) Castlecreavie	19%	19.5%	43%	86.5	13.5	6
(D) Craig Hill	32%	32%	100%	71	29	1
(E) Dunjarg Hill	22%	22%	75%	86	4	6
(E) Halferne Mote	17%	17%	50%	96.5	3.5	4
(E) Mote of Doon	19.5%	19.5%	55%	98.5	1.5	6
(E) Muncraig	52%	15%	60%	100	0	3
(E) Southpark	33%	22%	50%	100	0	3
(E) Tregallon Mote	16%	16%	100%	56	44	6
(E) Watch Knowe	13%	13%	0%	45	55	0
(S) Airds	48%	5.5%	57%	100	0	4
(S) Bargrug	12%	12%	0%	39	61	0
(S) Barnsoul	9.5%	9.5%	50%	60	40	3
(S) Camp Hill Drumcoltran	21%	21%	100%	85.5	14.5	2
(S) Carseglass	6%	6%	0%	36	64	0
(S) Castlecreavie	18%	18%	42%	86.5	13.5	5
(S) Craikness Hill	31%	8%	17%	95	5	1
(S) Gilfoot Mote	5%	5%	0%	98	2	0
(S) Glenlair Burn	9%	9%	33%	87	13	2
(S) Harper’s Hill	18%	18%	100%	82	18	2
(S) Hass	3%	3%	8%	50.5	49.5	1
(S) Kirkbride	19%	19%	33%	87	13	4
(S) Knocklearn	15%	15%	0%	44	56	0
(S) Little Sypland	10%	10%	38%	78.5	21.5	5
(S) Manxman’s Rock	54.5%	6%	40%	100	0	2
(S) McNaughton’s Fort	10.5%	10.5%	43%	67	33	3
(S) Meikle Sypland	33.5%	34%	40%	93.5	6.5	6
(S) Merkland Hill	13%	13%	100%	41	59	1
(S) Milton	4%	6%	40%	96	4	4
(S) Muncraig Heugh	42%	5%	40%	100	0	2
(S) Nether Hazelfield	17.5%	17%	38.5%	85	15	5
(S) North Milton	1%	1%	0%	100	0	0
(S) Seaside North	34%	41.5%	40%	80	20	4
(S) Seaside South	21.5%	33%	40%	78.5	21.5	4

(S) Spouty Dennans E	45%	4%	11%	88	12	1
(S) Spouty Dennans W	49%	6.5%	11%	89.5	10.5	1
(S) Torkirra	11%	11%	33%	73	27	1
(S) West Kirkcarswell	4%	4%	6%	100	0	1
Arden	7%	7%	27%	85	15	3
Auld Kirk of Lochroan	34%	34%	43%	73	27	3
Barn Heugh	47%	24%	33%	100	0	2
Barr Hill	50%	50%	46.5%	92	8	3
Beacon Hill	53%	53%	50%	88	12.5	5
Big Airds Hill	75%	62%	100%	86	14	7
Borness Batteries	48%	3.5%	4%	100	0	0
Camp Hill	21%	21%	25%	93.5	6.5	2
Camp Hill (Urr)	19%	19%	67%	98	2	4
Carminnows	9.5%	9.5%	0%	26	74	0
Carse Mote	12%	11.5%	8%	93	7	1
Castle Hill (Buittle)	8%	8%	20%	66	34	1
Castle Hill (Tongland)	23%	23%	42%	91.5	8.5	5
Castle Hill (Twynholm)	7%	7%	27%	100	0	3
Castle Muir	47.5%	5%	36%	100	0	4
Castlehill (Troqueer)	31%	31%	60%	70	30	3
Castlehill Point, West Barcloy	50%	13%	75%	72	28	3
Castleyards	32%	3.5%	10%	86	14.5	1
Conchieton Doon	17%	17%	29%	90	0	2
Corra Hill	15%	15%	36%	83	17	4
Court Hill	39%	39%	83%	74.5	25.5	5
Court Knowe	37%	12.5%	75%	89	11	3
Craigraploch	57%	32%	56%	98	2	5
Crofts Mote	26%	26%	29%	74.5	25.5	2
Doon Hill, Balig	11%	13%	29%	98.5	1.5	2
Doon of Carsluith	57%	17%	25%	60	40	0
Doon Wood	28%	19%	25%	96.5	3.5	2
Drummore Castle	47.5%	37%	86%	98	2	6
Dungarry	20%	20%	45%	73.5	26.5	5
Dunguile Hill	37%	37%	78%	88	12	7
East Kirkcarswell	5%	5%	20%	100	0	3
Edgarton Mote	19%	19%	100%	71	29	1
Ernambrie Mote	28%	28%	88%	84	16	7
Giant’s Dyke	52%	52%	67%	70.5	29.5	2

Glengappock Mote	18%	18%	30%	82	18	3
Glennap Fort	20%	15%	36%	96	4	4
Hall Hill Mote	30%	30%	20%	90	10	2
Ingleston	21%	21%	22%	92	8	2
Ingleston Mote	41%	41%	30%	91.5	8.5	3
Kerbers	11.5%	11.5%	33%	86	14	3
Kirkchrist Mote	26%	27%	70%	98	2	7
Kirkland Fort	6%	7%	7%	100	0	1
Little Airds Hill	75%	54%	75%	84.5	15.5	6
March Cleugh	2%	2%	0%	96	4	0
McCulloch's Castle	48%	7%	0%	25	75	0
Minnydow Mote	5%	5%	20%	94	6	1
Mochrum Fell	18.5%	18.5%	33%	54.5	45.5	1
Mote Hill	24%	24%	67%	95.5	4.5	6
Mote Hill, Margley	13%	13%	29%	85	15	2
Mote of Mark	19%	8%	40%	63.5	36.5	2
Moyle Hill	50%	51.5%	33%	61	39	1
Nethertown of Almorness	40%	36%	71%	87	13	5
Stroanfreggan Craig	20%	20%	0%	16.5	83.5	0
Suie Hill	47%	47%	50%	82	18	6
The Doon, Twynholm	23%	23%	64%	87	13	7
The Doons	35.5%	35%	67%	78	22	4
Torkirra	21%	21%	50%	66	34	1
Torrs Hill	25.5%	25.5%	57%	88	12	4
Trusty's Hill	30%	31%	67%	86.5	13.5	2
Wraith Plantation	26%	25%	54%	78	22	7

Kirkcudbrightshire 1 km Visibility

Site	% area vis (incl sea)	% land vis	% sites vis	% land vis Ag	% land vis non ag	# sites visible
(D) Castle Haven	43%	23.5%	N/A	100	0	0
(D) Castlecreavie	40%	40%	100%	100	0	1
(D) Craig Hill	45%	45%	N/A	55	45	0
(E) Dunjarg Hill	62%	62%	N/A	100	0	0
(E) Halferne Mote	30%	30%	100%	100	0	1
(E) Mote of Doon	59%	59%	N/A	100	0	0
(E) Muncraig	43%	37%	50%	100	0	1
(E) Southpark	63%	63%	N/A	100	0	0
(E) Tregallon Mote	63.5%	63.5%	100%	66.5	33.5	2
(E) Watch Knowe	39%	39%	N/A	85	15	0
(S) Airds	55%	12%	100%	100	0	2
(S) Bargrug	57%	57%	N/A	70	30	0
(S) Barnsoul	38%	38%	100%	86.5	13.5	3
(S) Camp Hill Drumcoltran	38%	38%	N/A	100	0	0
(S) Carseglass	48%	48%	N/A	100	0	0
(S) Castlecreavie	42%	42%	N/A	100	0	0
(S) Craikness Hill	42%	42%	0%	100	0	0
(S) Gilfoot Mote	37.5%	37.5%	N/A	99.5	0.5	0
(S) Glenlair Burn	46%	46%	N/A	100	0	0
(S) Harper's Hill	52%	52%	N/A	60	40	0
(S) Hass	45%	45%	100%	65	35	1
(S) Kirkbride	76%	76%	N/A	82	18	0
(S) Knocklearn	45%	45%	N/A	86	14	0
(S) Little Sypland	52.5%	52.5%	N/A	92	8	0
(S) Manxman's Rock	79%	55.5%	0%	100	0	0
(S) McNaughton's Fort	35%	35%	100%	94	6	3
(S) Meikle Sypland	49%	49%	N/A	100	0	0
(S) Merkland Hill	13%	13%	N/A	93	7	0
(S) Milton	32.5%	32.5%	N/A	100	0	0
(S) Muncraig Heugh	49%	20%	0%	100	0	0
(S) Nether Hazelfield	30%	30%	N/A	100	0	0
(S) North Milton	13%	13%	N/A	100	0	0
(S) Seaside North	56%	51%	0%	75	25	0
(S) Seaside South	52.5%	57%	0%	49	51	0

(S) Spouty Dennans E	56%	32.5%	50%	100	0	1
(S) Spouty Dennans W	64%	41%	50%	100	0	1
(S) Torkirra	35%	35%	100%	65	35	1
(S) West Kirkcarswell	40%	40%	100%	100	0	1
Arden	28%	28%	100%	100	0	1
Auld Kirk of Lochroan	32.5%	32.5%	N/A	7	93	0
Barn Heugh	61%	58.5%	100%	100	0	1
Barr Hill	73.5%	73.5%	N/A	100	0	0
Beacon Hill	70.5%	70.5%	N/A	100	0	0
Big Airds Hill	71%	68.5%	100%	89	11	2
Borness Batteries	50%	9%	0%	100	0	0
Camp Hill	77%	76%	N/A	100	0	0
Camp Hill (Urr)	62%	62%	N/A	100	0	0
Carminnows	56%	56%	N/A	43	57	0
Carse Mote	55%	55%	N/A	99.5	0.5	0
Castle Hill (Buittle)	27%	27%	N/A	100	0	0
Castle Hill (Tongland)	48%	48%	N/A	100	0	0
Castle Hill (Twynholm)	23.5%	23.5%	100%	100	0	1
Castle Muir	71%	62%	N/A	100	0	0
Castlehill (Troqueer)	44%	44%	100%	100	0	1
Castlehill Point, West Barcloy	77%	22%	N/A	100	0	0
Castleyards	48%	36%	0%	100	0	0
Conchieton Doon	77%	77%	100%	100	0	1
Corra Hill	73.5%	73.5%	N/A	100	0	0
Court Hill	55%	55%	N/A	100	0	0
Court Knowe	29%	29%	N/A	66.5	33.5	0
Craigraploch	56%	65%	N/A	88	12	0
Crofts Mote	47%	47%	N/A	100	0	0
Doon Hill, Balig	78%	78%	N/A	100	0	0
Doon of Carsluith	66%	60.5%	N/A	41	59	0
Doon Wood	63%	51%	0%	100	0	0
Drummore Castle	28.5%	29%	100%	100	0	1
Dungarry	63%	63%	100%	31	69	1
Dunguile Hill	64.5%	64.5%	100%	89	11	2
East Kirkcarswell	33%	33%	100%	100	0	1
Edgarton Mote	51%	51%	N/A	99	1	0
Ernambrie Mote	47%	47%	100%	100	0	1
Giant's Dyke	73%	73%	N/A	27.5	72.5	0

Glengappock Mote	39%	39%	N/A	88	12	0
Glennap Fort	71%	71%	N/A	89	11	0
Hall Hill Mote	57%	57%	100%	66	34	2
Ingleston	54%	54%	50%	100	0	1
Ingleston Mote	62%	62%	100%	59	41	1
Kerbers	48%	48%	50%	94	6	1
Kirkchrist Mote	39%	41%	100%	100	0	1
Kirkland Fort	8%	8%	N/A	100	0	0
Little Airds Hill	73%	65%	100%	100	0	2
March Cleugh	32%	32%	N/A	92	8	0
McCulloch's Castle	50%	12%	0%	100	0	0
Minnydow Mote	25.5%	25.5%	N/A	100	0	0
Mochrum Fell	61%	61%	N/A	30	70	0
Mote Hill	71%	71%	N/A	100	0	0
Mote Hill, Margley	44%	44%	N/A	99	1	0
Mote of Mark	72%	56%	N/A	100	0	0
Moyle Hill	76%	76%	N/A	46	54	0
Nethertown of Almorness	57%	58%	N/A	46.5	53.5	0
Stroanfreggan Craig	68%	68%	N/A	18	82	0
Suie Hill	80%	80%	N/A	57	43	0
The Doon, Twynholm	78%	78%	100%	100	0	1
The Doons	55%	55%	100%	100	0	3
Torkirra	43%	43%	100%	83	17	1
Torrs Hill	78%	78%	N/A	100	0	0
Trusty's Hill	36%	36%	N/A	98	2	0
Wraith Plantation	57%	57%	N/A	100	0	0

Kirkcudbrightshire 10 km Proximity

Site	# sites	% land Ag	% land not Ag
(D) Castle Haven	22	92	8
(D) Castlecreavie	45	90.5	9.5
(D) Craig Hill	16	54	46
(E) Dunjarg Hill	26	81	19

(E) Halferne Mote	23	81	19
(E) Mote of Doon	20	78.5	21.5
(E) Muncraig	21	96	4
(E) Southpark	22	99	1
(E) Tregallon Mote	23	73.5	26.5
(E) Watch Knowe	15	47	53
(S) Airds	25	81.5	18.5
(S) Bargrug	12	63	37
(S) Barnsoul	16	74.5	25.5
(S) Camp Hill Drumcoltran	18	68	32
(S) Carseglass	2	42	58
(S) Castlecreavie	42	91	9
(S) Craikness Hill	30	96	4
(S) Gilfoot Mote	35	80.5	19.5
(S) Glenlair Burn	18	77	33
(S) Harper’s Hill	16	56	44
(S) Hass	41	87	13
(S) Kirkbride	42	85	15
(S) Knocklearn	11	51	49
(S) Little Sypland	46	86	14
(S) Manxman’s Rock	18	99	1
(S) McNaughton’s Fort	29	74	26
(S) Meikle Sypland	43	88	12
(S) Merkland Hill	10	56	44
(S) Milton	37	93	7
(S) Muncraig Heugh	19	97	3
(S) Nether Hazelfield	30	86.5	13.5
(S) North Milton	39	91.5	8.5
(S) Seaside North	33	83	17
(S) Seaside South	33	46	54
(S) Spouty Dennans E	28	85.5	14.5
(S) Spouty Dennans W	27	86	14
(S) Torkirra	13	63	37
(S) West Kirkcarswell	40	89	11

Arden	34	83	17
Auld Kirk of Lochroan	20	73	27
Barn Heugh	21	95	5
Barr Hill	23	78	22
Beacon Hill	30	77.5	22.5
Big Airds Hill	30	82.5	17.5
Borness Batteries	17	100	0
Camp Hill	27	73.5	26.5
Camp Hill (Urr)	25	78	22
Carminnows	2	24	76
Carse Mote	38	84	15
Castle Hill (Buittle)	30	78.5	21.5
Castle Hill (Tongland)	35	82	18
Castle Hill (Twynholm)	38	87	13
Castle Muir	27	85	15
Castlehill (Troqueer)	24	76	24
Castlehill Point, West Barcloy	20	69	31
Castleyards	28	88	12
Conchieton Doon	34	81	19
Corra Hill	38	86	14
Court Hill	27	71.5	28.5
Court Knowe	13	74	26
Craigraploch	21	93	7
Crofts Mote	22	79	21
Doon Hill, Balig	35	90	10
Doon of Carsluith	7	68	32
Doon Wood	33	94	6
Drummore Castle	32	95	5
Dungarry	46	87	13
Dunguile Hill	38	82	18
East Kirkcarswell	41	88.5	11.5
Edgarton Mote	13	58	42
Ernambrie Mote	23	81.5	18.5
Giant’s Dyke	28	68	32

Glengappock Mote	19	72	28
Glennap Fort	30	91.5	8.5
Hall Hill Mote	31	78.5	21.5
Ingleston	37	82	18
Ingleston Mote	29	79	21
Kerbers	38	81.5	18.5
Kirkchrist Mote	40	86.5	11.5
Kirkland Fort	42	88	12
Little Airds Hill	26	80	20
March Cleugh	36	81.5	18.5
McCulloch's Castle	4	60.5	39.5
Minnydow Mote	24	75.5	24.5
Mochrum Fell	14	60	40
Mote Hill	26	83	17
Mote Hill, Margley	19	67	33
Mote of Mark	22	68.5	31.5
Moyle Hill	23	64	36
Nethertown of Almorness	26	73.5	26.5
Stroanfreggan Craig	4	24	76
Suie Hill	43	89.5	10.5
The Doon, Twynholm	31	81.5	18.5
The Doons	26	73	27
Torkirra	12	62.5	37.5
Torrs Hill	30	79	21
Trusty's Hill	16	60	40
Wraith Plantation	38	86	14

Kirkcudbrightshire 5 km Proximity

Site	# sites	% of land Ag	% of land non Ag	Sqm of Ag land
(D) Castle Haven	7	100	0	40448267
(D) Castlecreavie	14	91	9	69115486
(D) Craig Hill	1	68	32	53407421

(E) Dunjarg Hill	8	91	9	71471696
(E) Halferne Mote	8	87.5	12.5	68722784
(E) Mote of Doon	11	91.5	8.5	71864397
(E) Muncraig	5	100	0	35343146
(E) Southpark	6	100	0	34557743
(E) Tregallon Mote	6	74	26	58119841
(E) Watch Knowe	3	37	63	29059920
(S) Airds	7	86	14	22383993
(S) Bargrug	2	40	60	31416130
(S) Barnsoul	6	76	26	59690647
(S) Camp Hill Drumcoltran	2	83	17	65188470
(S) Carseglass	0	52.5	47.5	41233671
(S) Castlecreavie	12	91	9	69115486
(S) Craikness Hill	6	98	2	37699356
(S) Gilfoot Mote	10	90	10	70686293
(S) Glenlair Burn	6	78	22	61261454
(S) Harper’s Hill	2	71.5	28.5	55370929
(S) Hass	13	78	22	60476050
(S) Kirkbride	12	79	21	62046857
(S) Knocklearn	1	41	59	32201533
(S) Little Sypland	13	81.5	18.5	64010365
(S) Manxman’s Rock	5	100	0	28667219
(S) McNaughton’s Fort	7	75	25	58905244
(S) Meikle Sypland	15	90.5	9.5	67544680
(S) Merkland Hill	1	54.5	45.5	42804477
(S) Milton	10	97	3	56549034
(S) Muncraig Heugh	5	100	0	33379638
(S) Nether Hazelfield	13	89	11	43197179
(S) North Milton	11	97	3	65973873
(S) Seaside North	10	79	21	40055566
(S) Seaside South	10	80.5	19.5	38877461
(S) Spouty Dennans E	9	97	3	39270163
(S) Spouty Dennans W	9	97.5	2.5	39270163
(S) Torkirra	3	47	53	36913953

(S) West Kirkcarswell	16	88	12	65973873
Arden	11	91.5	8.5	70293591
Auld Kirk of Lochroan	7	82.5	17.5	64795768
Barn Heugh	6	100	0	9424839
Barr Hill	6	95	5	74613309
Beacon Hill	10	82	18	64403067
Big Airds Hill	7	87.5	12.5	26703711
Borness Batteries	5	100	0	27096412
Camp Hill	8	92	8	70293591
Camp Hill (Urr)	6	87	13	68330083
Carminnows	1	24.5	75.5	19242380
Carse Mote	12	95	5	73042502
Castle Hill (Buittle)	5	87	13	68330083
Castle Hill (Tongland)	12	93	7	72649801
Castle Hill (Twynholm)	11	98	2	71078994
Castle Muir	11	93.5	6.5	30238025
Castlehill (Troqueer)	5	74	26	58119841
Castlehill Point, West Barcloy	4	74	26	24347501
Castleyards	10	98.5	1.5	42019074
Conchieton Doon	7	95	5	73827906
Corra Hill	11	79.5	20.5	62439558
Court Hill	6	76	24	58119841
Court Knowe	4	63	37	27881815
Craigraploch	9	98.5	1.5	36128550
Crofts Mote	7	80	20	62832260
Doon Hill, Balig	7	98	2	61654155
Doon of Carsluith	1	54.5	45.5	21598589
Doon Wood	8	98	2	63617663
Drummore Castle	7	98	2	45160687
Dungarry	11	78.5	21.5	61654155
Dunguile Hill	9	84.5	15.5	66366575
East Kirkcarswell	15	86.5	13.5	65581171
Edgarton Mote	1	46	54	36128550
Ernambrie Mote	8	86.5	13.5	67937381

Giant's Dyke	3	67.5	32.5	53014719
Glengappock Mote	10	82	18	64403067
Glennap Fort	11	99	1	46338792
Hall Hill Mote	10	85	15	66759276
Ingleston	9	84	16	65973873
Ingleston Mote	10	86.5	13.5	67937381
Kerbers	9	79	21	62046857
Kirkchrist Mote	10	59.5	40.5	42411776
Kirkland Fort	14	98	2	69508188
Little Airds Hill	8	85	15	22776694
March Cleugh	12	91	9	71471696
McCulloch's Castle	1	88	12	24347501
Minnydow Mote	5	92	8	72257099
Mochrum Fell	3	64	36	50265808
Mote Hill	9	88	12	69115486
Mote Hill, Margley	7	77	23	60476050
Mote of Mark	5	74	26	36521251
Moyle Hill	3	62	38	46338792
Nethertown of Almorness	7	81.5	18.5	47909598
Stroanfreggan Craig	1	23	77	18064275
Suie Hill	12	80.5	19.5	61261454
The Doon, Twynholm	11	88	12	68330083
The Doons	6	75.5	14.5	59297945
Torkirra	2	43	57	33772340
Torrs Hill	7	90.5	9.5	71078994
Trusty's Hill	3	82	18	60868752
Wraith Plantation	13	71.5	28.5	47516897

Kirkcudbrightshire 1 km Proximity

Site	**# sites**	**% of land Ag**	**% of land non Ag**	**Sqm of Ag land**
(D) Castle Haven	0	100	0	1916147
(D) Castlecreavie	1	100	0	3141225

(D) Craig Hill	0	56	44	1759086
(E) Dunjarg Hill	0	100	0	3141225
(E) Halferne Mote	1	100	0	3141225
(E) Mote of Doon	0	100	0	3141225
(E) Muncraig	2	100	0	1806204
(E) Southpark	0	100	0	3109813
(E) Tregallon Mote	2	67	33	2104621
(E) Watch Knowe	0	84	16	2638629
(S) Airds	2	100	0	1256490
(S) Bargrug	0	60	40	1884735
(S) Barnsoul	3	91.5	8.5	2874221
(S) Camp Hill Drumcoltran	0	100	0	3141225
(S) Carseglass	0	74.5	25.5	2340213
(S) Castlecreavie	0	100	0	3141225
(S) Craikness Hill	1	100	0	3141225
(S) Gilfoot Mote	0	94.5	5.5	2968458
(S) Glenlair Burn	0	100	0	3141225
(S) Harper’s Hill	0	99.5	0.5	3125519
(S) Hass	1	42.5	57.5	1335021
(S) Kirkbride	0	83	17	2607217
(S) Knocklearn	0	87	13	2732866
(S) Little Sypland	0	84	16	2638629
(S) Manxman’s Rock	1	100	0	1225078
(S) McNaughton’s Fort	3	94	6	2952752
(S) Meikle Sypland	0	100	0	3141225
(S) Merkland Hill	0	53.5	46.5	1680555
(S) Milton	0	100	0	3141225
(S) Muncraig Heugh	1	100	0	1444964
(S) Nether Hazelfield	0	100	0	3141225
(S) North Milton	0	100	0	3141225
(S) Seaside North	1	78	22	2104621
(S) Seaside South	1	69.5	30.5	2010384
(S) Spouty Dennans E	2	100	0	1633437
(S) Spouty Dennans W	2	100	0	1570613

(S) Torkirra	1	71	29	2230270
(S) West Kirkcarswell	1	100	0	3141225
Arden	1	100	0	3141225
Auld Kirk of Lochroan	0	18.5	81.5	581126.6
Barn Heugh	1	100	0	1978972
Barr Hill	0	100	0	3141225
Beacon Hill	0	100	0	3141225
Big Airds Hill	2	92.5	7.5	1884735
Borness Batteries	1	100	0	1444964
Camp Hill	0	100	0	3141225
Camp Hill (Urr)	0	100	0	3141225
Carminnows	0	38	62	1193666
Carse Mote	0	96	4	3015576
Castle Hill (Buittle)	0	100	0	3141225
Castle Hill (Tongland)	0	100	0	3141225
Castle Hill (Twynholm)	1	100	0	3141225
Castle Muir	0	100	0	1287902
Castlehill (Troqueer)	1	97	3	3046988
Castlehill Point, West Barcloy	0	100	0	848130.8
Castleyards	2	100	0	2057502
Conchieton Doon	1	100	0	3141225
Corra Hill	0	100	0	3141225
Court Hill	0	100	0	3141225
Court Knowe	0	74	26	2324507
Craigraploch	0	80	20	2120327
Crofts Mote	0	100	0	3141225
Doon Hill, Balig	0	100	0	3141225
Doon of Carsluith	0	52	48	1397845
Doon Wood	0	100	0	2230270
Drummore Castle	1	100	0	3094107
Dungarry	1	25	75	785306.3
Dunguile Hill	2	91	9	2858515
East Kirkcarswell	1	95	5	2984164
Edgarton Mote	0	93	7	2921339

Ernambrie Mote	1	100	0	3141225
Giant's Dyke	0	30.5	69.5	958073.6
Glengappock Mote	0	89.5	10.5	2811396
Glennap Fort	0	90	10	2827103
Hall Hill Mote	2	51	49	1602025
Ingleston	2	100	0	3141225
Ingleston Mote	1	54	46	1696262
Kerbers	2	87.5	12.5	2748572
Kirkchrist Mote	1	100	0	3046988
Kirkland Fort	0	83	17	2607217
Little Airds Hill	2	100	0	1696262
March Cleugh	0	94	6	2952752
McCulloch's Castle	1	100	0	1476376
Minnydow Mote	0	99.5	0.5	3125519
Mochrum Fell	0	35	65	1099429
Mote Hill	0	100	0	3141225
Mote Hill, Margley	0	98.5	1.5	3094107
Mote of Mark	0	100	0	1825052
Moyle Hill	0	41	59	1287902
Nethertown of Almorness	0	30	70	581126.6
Stroanfreggan Craig	0	30	70	942367.5
Suie Hill	0	52	48	1633437
The Doon, Twynholm	1	100	0	3141225
The Doons	3	100	0	3141225
Torkirra	1	63	37	1978972
Torrs Hill	0	100	0	3141225
Trusty's Hill	0	98.5	1.5	3094107
Wraith Plantation	0	98	2	3078401

10 km Relative Height

Site	Site Height m. OD	Mean Height of landscape m. OD	% land below	% land above
(D) Castle Haven	32	12	9%	91%

(D) Castlecreavie	58	158	92%	8%
(D) Craig Hill	115	140	68%	32%
(E) Dunjarg Hill	92	81	48%	52%
(E) Halferne Mote	98	145	83.5%	16.5%
(E) Mote of Doon	112	112	56%	44%
(E) Muncraig	21	53	56%	44%
(E) Southpark	21	62	61.5%	38.5%
(E) Tregallon Mote	80	99	64%	36%
(E) Watch Knowe	236	189	29%	71%
(S) Airds	36	28	17%	83%
(S) Bargrug	108	114	65%	35%
(S) Barnsoul	127	106	43%	57%
(S) Camp Hill Drumcoltran	124	174	81%	19%
(S) Carseglass	219	217	49%	51%
(S) Castlecreavie	60	141	87%	13%
(S) Craikness Hill	33	58	43%	57%
(S) Gilfoot Mote	98	51	15%	85%
(S) Glenlair Burn	136	121	44%	56%
(S) Harper’s Hill	118	49	19%	81%
(S) Hass	67	119	80%	20%
(S) Kirkbride	75	172	95%	5%
(S) Knocklearn	199	166	34%	66%
(S) Little Sypland	81	121	73%	27%
(S) Manxman’s Rock	16	14	8%	92%
(S) McNaughton’s Fort	128	112	53%	47%
(S) Meikle Sypland	75	126	79%	21%
(S) Merkland Hill	138	170	73.5%	26.5%
(S) Milton	49	108	70%	30%
(S) Muncraig Heugh	19	32	28%	72%
(S) Nether Hazelfield	47	116	68%	32%
(S) North Milton	55	90	58%	42%
(S) Seaside North	53	56	31%	69%
(S) Seaside South	51	56	31%	69%
(S) Spouty Dennans E	38	40	21%	79%
(S) Spouty Dennans W	38	42	21%	79%
(S) Torkirra	115	77	34%	66%
(S) West Kirkcarswell	55	113	70%	30%
Arden	83	92	54.5%	45.5%
Auld Kirk of Lochroan	110	211	95.5%	4.5%

Barn Heugh	26	58	56%	44%
Barr Hill	116	182	87.5%	22.5%
Beacon Hill	91	212	93%	7%
Big Airds Hill	39	100	57%	43
Borness Batteries	16	36	30%	70%
Camp Hill	87	113	62.5%	37.5%
Camp Hill (Urr)	95	69	37%	63%
Carminnows	277	156	10.5%	89.5%
Carse Mote	91	33	8%	92%
Castle Hill (Buittle)	76	149	92%	8%
Castle Hill (Tongland)	95	72	38%	62%
Castle Hill (Twynholm	73	60	37%	63%
Castle Muir	38	31	16%	84%
Castlehill (Troqueer)	79	122	75%	25%
Castlehill Point, West Barcloy	40	30	22%	78%
Castleyards	38	32	15%	85%
Conchieton Doon	75	132	79%	21%
Corra Hill	80	144	91%	9%
Court Hill	73	152	89%	11%
Court Knowe	63	122	62%	38%
Craigraploch	30	102	74%	26%
Crofts Mote	96	106	78.5%	21.5%
Doon Hill, Balig	48	112	73%	27%
Doon of Carsluith	64	175	79%	21%
Doon Wood	49	38	21%	79%
Drummore Castle	39	124	85%	15%
Dungarry	69	233	98%	2%
Dunguile Hill	74	211	98%	2%
East Kirkcarswell	56	149	88%	12%
Edgarton Mote	111	120	59%	41%
Ernambrie Mote	96	147	85%	15%
Giant's Dyke	108	161	81%	19%
Glengappock Mote	118	162	76%	24%
Glennap Fort	36	87	56%	44%
Hall Hill Mote	105	131	67%	33%
Ingleston	75	142	91%	9%
Ingleston Mote	98	149	79%	21%
Kerbers	73.5	165	95%	5%
Kirkchrist Mote	76	76	50%	50%
Kirkland Fort	74	64	31%	69%
Little Airds Hill	37	87	52%	48%
March Cleugh	96	38	8%	92%
McCulloch's Castle	38	24	23.5%	76.5%

Minnydow Mote	127	115	48%	52%
Mochrum Fell	146	252	94%	6%
Mote Hill	94	120	73.5%	26.5%
Mote Hill, Margley	147	128	43%	57%
Mote of Mark	52	43	26%	74%
Moyle Hill	73	150	83%	17%
Nethertown of Almorness	58	96	56%	44%
Stroanfreggan Craig	295	230	32%	68%
Suie Hill	59	240	98%	2%
The Doon, Twynholm	86	106	66.5%	33.5%
The Doons	129	156	69%	31%
Torkirra	114	107	60%	40%
Torrs Hill	81	81	58%	42%
Trusty's Hill	109	72	32%	68%
Wraith Plantation	59	64	35%	65%

Kirkcudbrightshire 5 km Relative Height

Site	Site Height m. OD	Mean Height of landscape m. OD	% land below	% land above
(D) Castle Haven	32	21	7%	93%
(D) Castlecreavie	58	93	94%	6%
(D) Craig Hill	115	91	87%	13%
(E) Dunjarg Hill	92	76	64.5%	35.5%
(E) Halferne Mote	98	86	94%	6%
(E) Mote of Doon	112	104	57%	43%
(E) Muncraig	21	18	74.5%	25.5%
(E) Southpark	21	18	85%	15%
(E) Tregallon Mote	80	77	65%	35%
(E) Watch Knowe	236	245	19%	81%
(S) Airds	36	16	27%	73%
(S) Bargrug	108	117	61%	39%
(S) Barnsoul	127	139	38%	62%
(S) Camp Hill Drumcoltran	124	110	95.5%	4.5%
(S) Carseglass	219	202	55%	45%
(S) Castlecreavie	60	94	87%	13%
(S) Craikness Hill	33	28	52.5%	47.5%
(S) Gilfoot Mote	98	83	20%	80%
(S) Glenlair Burn	136	144	26%	74%
(S) Harper's Hill	118	112	24%	76%
(S) Hass	67	118	51.5%	48.5%
(S) Kirkbride	75	126	84%	16%

(S) Knocklearn	199	194	24.5%	75.5%
(S) Little Sypland	81	114	60%	40%
(S) Manxman's Rock	16	14	6%	94%
(S) McNaughton's Fort	128	139	51%	49%
(S) Meikle Sypland	75	85	78%	22%
(S) Merkland Hill	138	124	79%	21%
(S) Milton	49	53	78%	22%
(S) Muncraig Heugh	19	17	31%	69%
(S) Nether Hazelfield	47	53	66%	34%
(S) North Milton	55	67	59%	41%
(S) Seaside North	53	54	46%	54%
(S) Seaside South	51	49	46.5%	53.5%
(S) Spouty Dennans E	38	47	11.5%	88.5%
(S) Spouty Dennans W	38	46	12%	88%
(S) Torkirra	115	115	39%	61%
(S) West Kirkcarswell	55	104	51%	49%
Arden	83	82	56%	44%
Auld Kirk of Lochroan	110	105	100%	0%
Barn Heugh	26	20	75%	25%
Barr Hill	116	103	96%	4%
Beacon Hill	91	77	99.5%	0.5%
Big Airds Hill	39	22	77%	23%
Borness Batteries	16	12	41%	59%
Camp Hill	87	83	73%	27%
Camp Hill (Urr)	95	70	55.5%	44.5%
Carminnows	277	219	11%	89%
Carse Mote	91	74	16%	84%
Castle Hill (Buittle)	76	79	89.5%	10.5%
Castle Hill (Tongland)	95	76	46%	54%
Castle Hill (Twynholm	73	62	41%	59%
Castle Muir	38	30	14%	86%
Castlehill (Troqueer)	79	74	81%	19%
Castlehill Point, West Barcloy	40	16	33.5%	66.5%
Castleyards	38	50	6%	94%
Conchieton Doon	75	77	88%	12%
Corra Hill	80	119	76%	24%

Court Hill	73	62	96%	4%
Court Knowe	63	78	45%	55%
Craigraploch	30	35	72.5%	27.5%
Crofts Mote	96	82	78.5%	21.5%
Doon Hill, Balig	48	65	76.5%	23.5%
Doon of Carsluith	64	84	52%	48%
Doon Wood	49	43	27%	73%
Drummore Castle	39	35	95%	5%
Dungarry	69	126	94%	6%
Dunguile Hill	74	104.5	92%	8%
East Kirkcarswell	56	106	81.5%	17.5%
Edgarton Mote	111	129	51.5%	48.5%
Ernambrie Mote	96	83	95%	5%
Giant’s Dyke	108	108	81%	19%
Glengappock Mote	118	119	84.5%	15.5%
Glennap Fort	36	48	52%	48%
Hall Hill Mote	105	90	76%	24%
Ingleston	75	102	79%	21%
Ingleston Mote	98	80	88%	12%
Kerbers	73.5	102.5	86%	14%
Kirkchrist Mote	76	59	62%	38%
Kirkland Fort	74	64	38%	62%
Little Airds Hill	37	16	79%	21%
March Cleugh	96	81	14.5%	85.5%
McCulloch’s Castle	38	23	26%	74%
Minnydow Mote	127	126	44%	56%
Mochrum Fell	146	152	98.5%	1.5%
Mote Hill	94	80	86%	14%
Mote Hill, Margley	147	151	33%	67%
Mote of Mark	52	25	54%	46%
Moyle Hill	73	59	94%	6%
Nethertown of Almorness	58	40	83%	17%
Stroanfreggan Craig	295	260	32%	68%
Suie Hill	59	113	95%	5%
The Doon, Twynholm	86	87	69%	31%
The Doons	129	145	66.5%	33.5%
Torkirra	114	120	60%	40%
Torrs Hill	81	72	68%	32%
Trusty’s Hill	109	94	41%	59%
Wraith Plantation	59	87	38%	62%

Kirkcudbrightshire 1 km Relative Height

Site	Site Height m. OD	Mean Height of landscape m. OD	% land below	% land above
(D) Castle Haven	32	15	21%	79%
(D) Castlecreavie	58	126	88.5%	11.5%
(D) Craig Hill	115	102	94%	6%
(E) Dunjarg Hill	92	63	93.5%	6.5%
(E) Halferne Mote	98	129	87%	13%
(E) Mote of Doon	112	84	85%	15%
(E) Muncraig	21	22	88%	12%
(E) Southpark	21	33	96%	4%
(E) Tregallon Mote	80	86	67%	33%
(E) Watch Knowe	236	189	55%	45%
(S) Airds	36	18	16%	84%
(S) Bargrug	108	111	60%	40%
(S) Barnsoul	127	110	46.5%	53.5%
(S) Camp Hill Drumcoltran	124	131	93%	7%
(S) Carseglass	219	214	67%	33%
(S) Castlecreavie	60	119	84%	16%
(S) Craikness Hill	33	46	77%	23%
(S) Gilfoot Mote	98	68	25%	75%
(S) Glenlair Burn	136	118	54%	46%
(S) Harper’s Hill	118	43%	69%	31%
(S) Hass	67	164	22%	78%
(S) Kirkbride	75	145	88%	12%
(S) Knocklearn	199	160	68%	32%
(S) Little Sypland	81	124	43.5%	56.5%
(S) Manxman’s Rock	16	9	16%	84%
(S) McNaughton’s Fort	128	111	68.5%	31.5%
(S) Meikle Sypland	75	85	100%	0%
(S) Merkland Hill	138	138	80%	20%
(S) Milton	49	98	73%	27%
(S) Muncraig Heugh	19	14	42%	58%
(S) Nether Hazelfield	47	91	82%	18%
(S) North Milton	55	104	16.5%	83.5%
(S) Seaside North	53	31	97.5%	2.5%
(S) Seaside South	51	36	98%	2%
(S) Spouty Dennans E	38	31	16%	84%
(S) Spouty Dennans W	38	29	19%	81%
(S) Torkirra	115	83	46%	56%

(S) West Kirkcarswell	55	124	32%	68%
Arden	83	82	64%	36%
Auld Kirk of Lochroan	110	157	99.6%	0.4%
Barn Heugh	26	21	95%	5%
Barr Hill	116	121	100%	0%
Beacon Hill	91	123	100%	0%
Big Airds Hill	39	27	100%	0%
Borness Batteries	16	11	72%	28%
Camp Hill	87	88	80%	20%
Camp Hill (Urr)	95	41	99%	1%
Carminnows	277	178	22%	78%
Carse Mote	91	38	46%	54%
Castle Hill (Buittle)	76	119	82%	18%
Castle Hill (Tongland)	95	47	70%	30%
Castle Hill (Twynholm	73	53	74%	26%
Castle Muir	38	9	75%	25%
Castlehill (Troqueer)	79	71	98%	2%
Castlehill Point, West Barcloy	40	6	64%	36%
Castleyards	38	31.5	17.5%	82.5%
Conchieton Doon	75	106	99%	1%
Corra Hill	80	124	93%	7%
Court Hill	73	61	99%	1%
Court Knowe	63	115	54%	46%
Craigraploch	30	51	99%	1%
Crofts Mote	96	85	85%	25%
Doon Hill, Balig	48	100	92%	8%
Doon of Carsluith	64	98	78%	22%
Doon Wood	49	25	40.5%	59.5%
Drummore Castle	39	60	99.8%	0.2%
Dungarry	69	176	86.5%	13.5%
Dunguile Hill	74	138.5	99.5%	0.5%
East Kirkcarswell	56	131	63%	37%
Edgarton Mote	111	103	62%	38%
Ernambrie Mote	96	122	94%	6%
Giant’s Dyke	108	83	100%	0%
Glengappock Mote	118	132	88%	12%
Glennap Fort	36	74	75%	25%
Hall Hill Mote	105	86	72.5%	27.5%
Ingleston	75	114	70%	30%
Ingleston Mote	98	98	84.5%	15.5%
Kerbers	73.5	138	70%	30%
Kirkchrist Mote	76	46	100%	0%

Kirkland Fort	74	55	39%	61%
Little Airds Hill	37	22	98.5%	1.5%
March Cleugh	96	69	7%	93%
McCulloch's Castle	38	10	23%	77%
Minnydow Mote	127	119	49%	51%
Mochrum Fell	146	208	86.5%	13.5%
Mote Hill	94	96	93%	7%
Mote Hill, Margley	147	129	59%	41%
Mote of Mark	52	28	44%	56%
Moyle Hill	73	70	100%	0%
Nethertown of Almorness	58	19	99%	1%
Stroanfreggan Craig	295	210	80%	20%
Suie Hill	59	165	99.5%	0.5%
The Doon, Twynholm	86	84	93.5%	6.5%
The Doons	129	111	100%	0%
Torkirra	114	100	66%	34%
Torrs Hill	81	55	100%	0%
Trusty's Hill	109	27	97.5%	2.5%
Wraith Plantation	59	53	73%	27%

Kirkcudbrightshire 200 m Relative Height

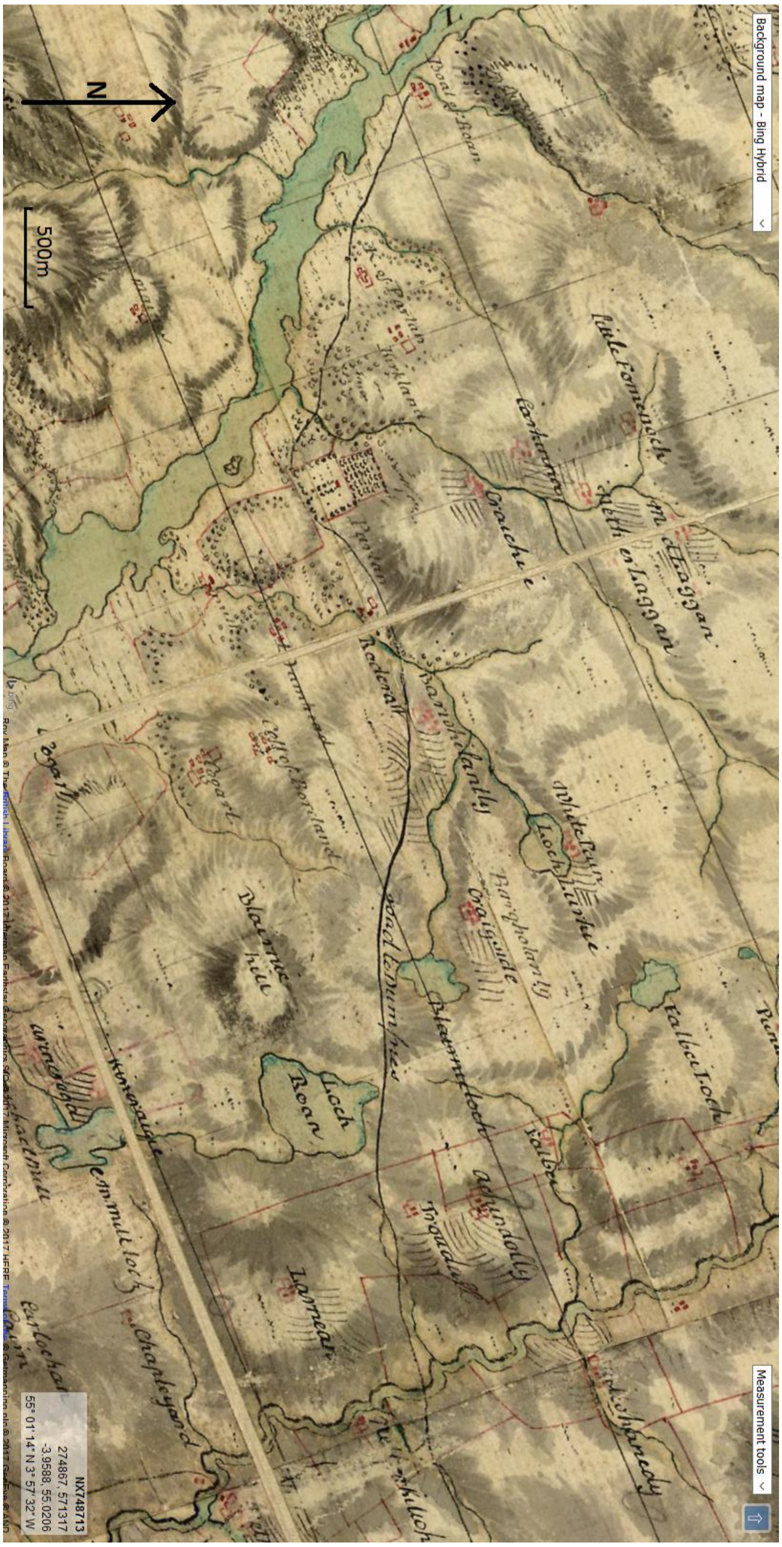
Site	Site Height m. OD	% land below	% land above
(D) Castle Haven	32	64	36
(D) Castlecreavie	58	87.5	12.5
(D) Craig Hill	115	100	0
(E) Dunjarg Hill	92	100	0
(E) Halferne Mote	98	87	13
(E) Mote of Doon	112	98	2
(E) Muncraig	21	100	0
(E) Southpark	21	95.5	4.5
(E) Tregallon Mote	80	100	0
(E) Watch Knowe	236	76	24
(S) Airds	36	25	75
(S) Bargrug	108	74.5	25.5
(S) Barnsoul	127	76	24
(S) Camp Hill Drumcoltran	124	69	31
(S) Carseglass	219	94.5	5.5
(S) Castlecreavie	60	96.5	3.5
(S) Craikness Hill	33	78.5	21.5
(S) Gilfoot Mote	98	25.5	74.5
(S) Glenlair Burn	136	91	9

(S) Harper's Hill	118	99.5	0.5
(S) Hass	67	54	46
(S) Kirkbride	75	93	7
(S) Knocklearn	199	93	7
(S) Little Sypland	81	86	14
(S) Manxman's Rock	16	54	46
(S) McNaughton's Fort	128	66	34
(S) Meikle Sypland	75	100	0
(S) Merkland Hill	138	66.5	33.5
(S) Milton	49	79	21
(S) Muncraig Heugh	19	39	61
(S) Nether Hazelfield	47	79.5	20.5
(S) North Milton	55	24	76
(S) Seaside North	53	79.5	20.5
(S) Seaside South	51	78	22
(S) Spouty Dennans E	38	72	28
(S) Spouty Dennans W	38	74.5	25.5
(S) Torkirra	115	49	51
(S) West Kirkcarswell	55	50	50
Arden	83	63.5	36.5
Auld Kirk of Lochroan	110	100	0
Barn Heugh	26	100	0
Barr Hill	116	100	0
Beacon Hill	91	100	0
Big Airds Hill	39	100	0
Borness Batteries	16	41	59
Camp Hill	87	100	0
Camp Hill (Urr)	95	100	0
Carminnows	277	72.5	27.5
Carse Mote	91	76	24
Castle Hill (Buittle)	76	100	0
Castle Hill (Tongland)	95	60	40
Castle Hill (Twynholm	73	100	0
Castle Muir	38	86	14
Castlehill (Troqueer)	79	99.5	0.5
Castlehill Point, West Barcloy	40	88	12

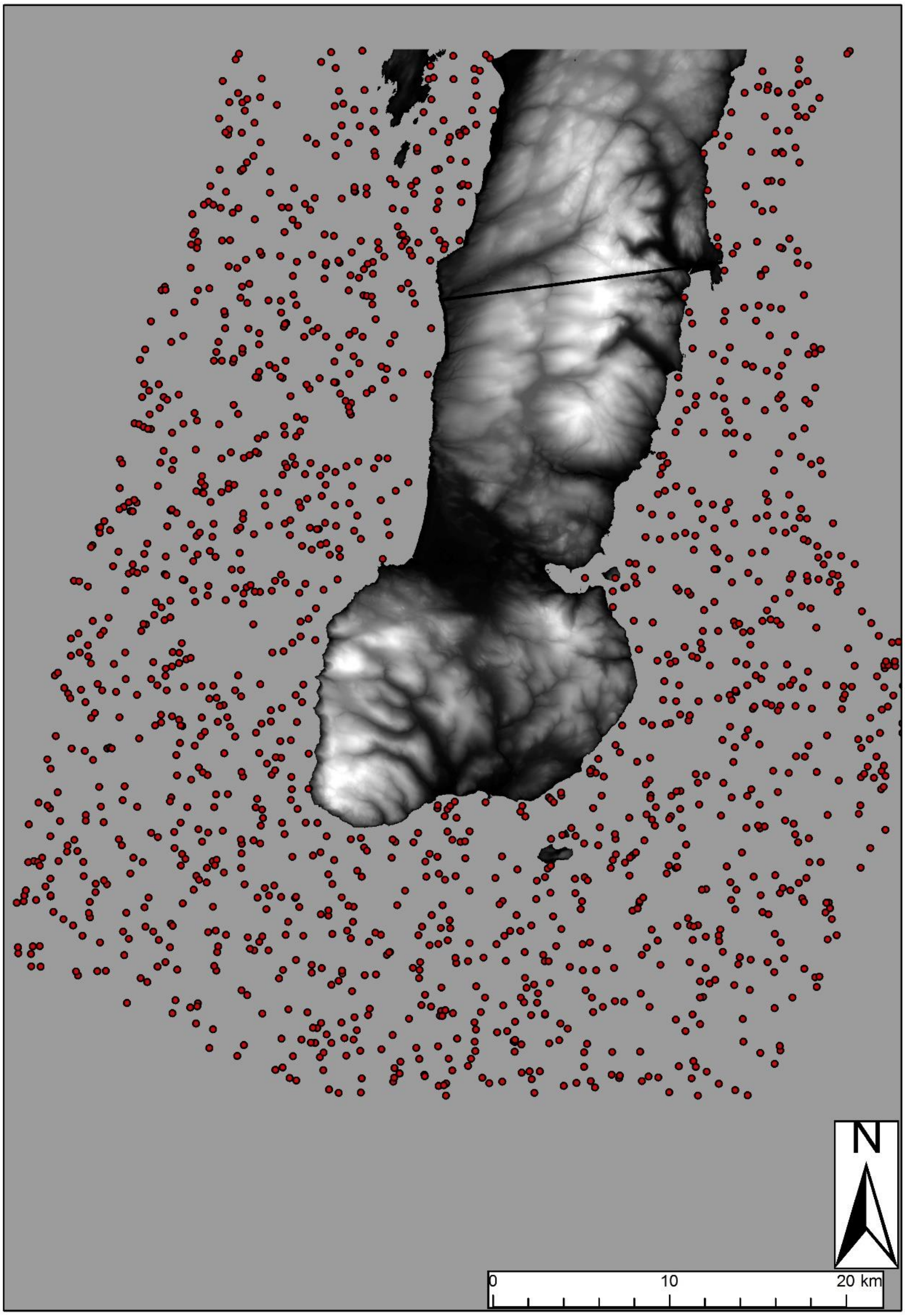
Castleyards	38	47.5	52.5
Conchieton Doon	75	100	0
Corra Hill	80	100	0
Court Hill	73	100	0
Court Knowe	63	74	26
Craigraploch	30	100	0
Crofts Mote	96	100	0
Doon Hill, Balig	48	100	0
Doon of Carsluith	64	81	19
Doon Wood	49	82	18
Drummore Castle	39	100	0
Dungarry	69	100	0
Dunguile Hill	74	100	0
East Kirkcarswell	56	48	52
Edgarton Mote	111	82	18
Ernambrie Mote	96	100	0
Giant’s Dyke	108	100	0
Glengappock Mote	118	100	0
Glennap Fort	36	100	0
Hall Hill Mote	105	96	4
Ingleston	75	87	13
Ingleston Mote	98	100	0
Kerbers	73.5	100	0
Kirkchrist Mote	76	100	0
Kirkland Fort	74	18	82
Little Airds Hill	37	100	0
March Cleugh	96	46	54
McCulloch’s Castle	38	16	84
Minnydow Mote	127	81	19
Mochrum Fell	146	100	0
Mote Hill	94	100	0
Mote Hill, Margley	147	86.5	13.5
Mote of Mark	52	100	0
Moyle Hill	73	100	0
Nethertown of Almorness	58	100	0
Stroanfreggan Craig	295	93.5	6.5
Suie Hill	59	100	0
The Doon, Twynholm	86	100	0
The Doons	129	100	0
Torkirra	114	82	18
Torrs Hill	81	100	0
Trusty’s Hill	109	99	1
Wraith Plantation	59	100	0

Appendix 2

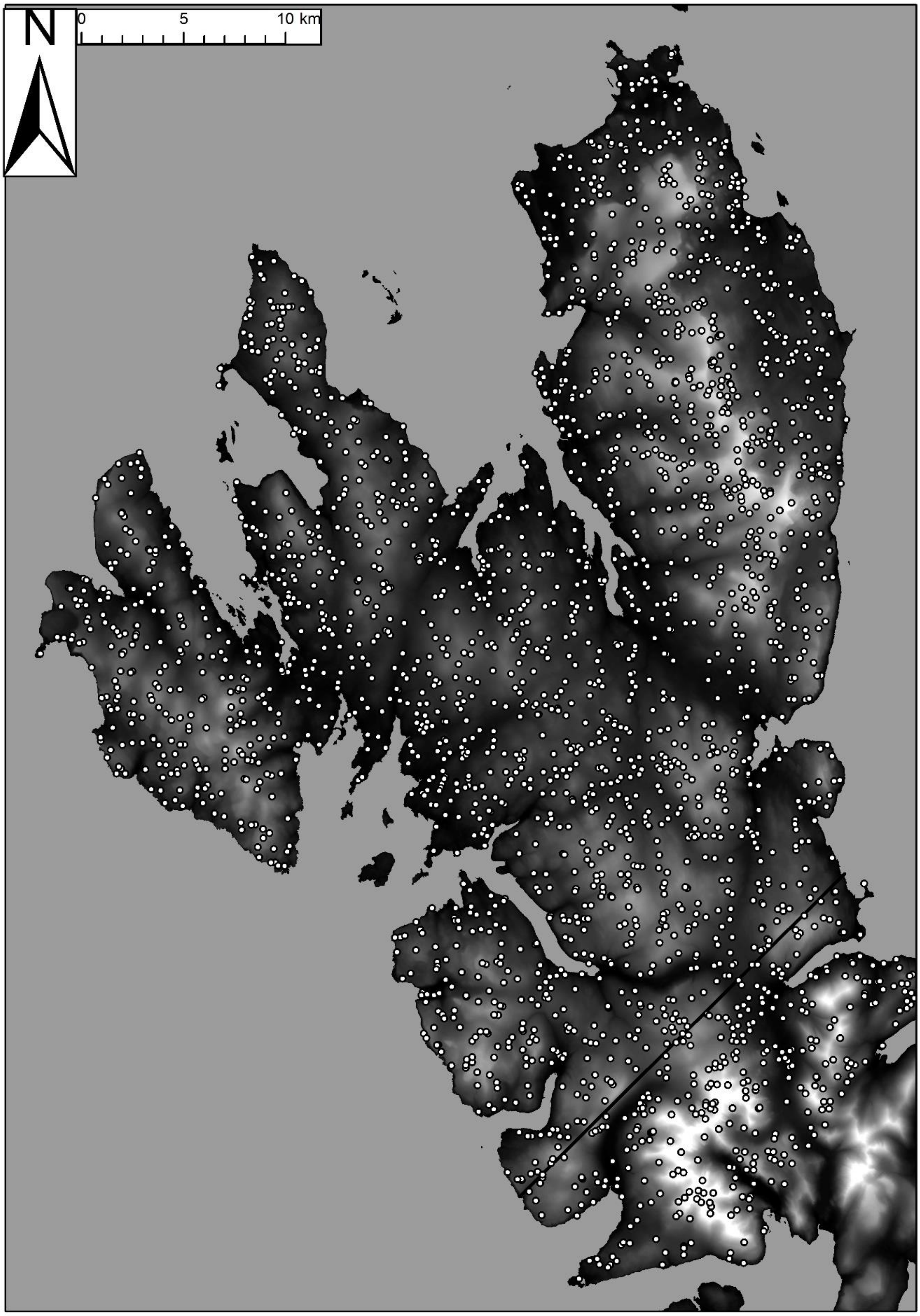
Blaeu's 1662 map of Skye. Reproduced with the permission of the National Library of Scotland.



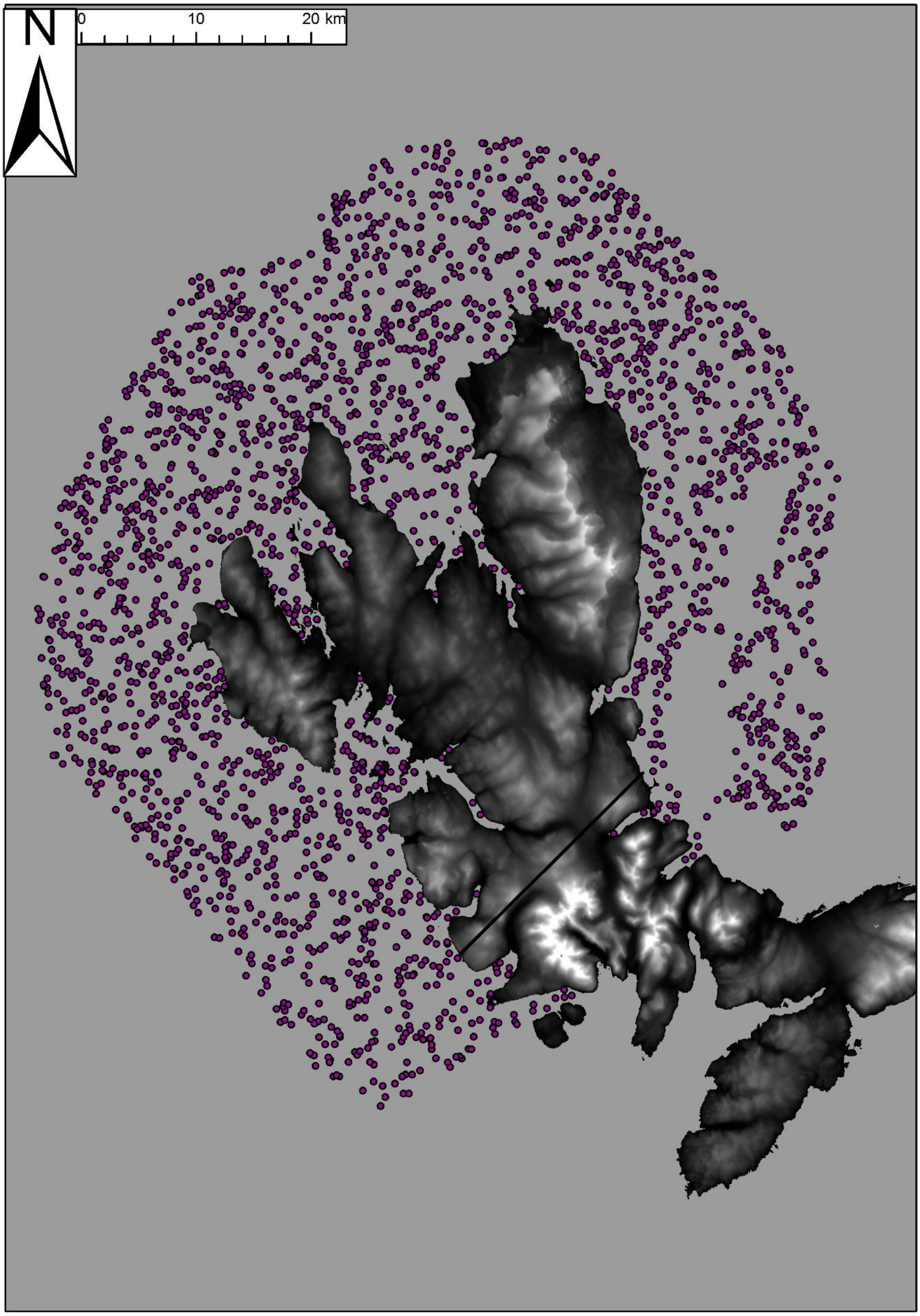
Roy's 1747-55 Military Survey of Scotland, showing part of the Glenkens, Kirkcudbrightshire.



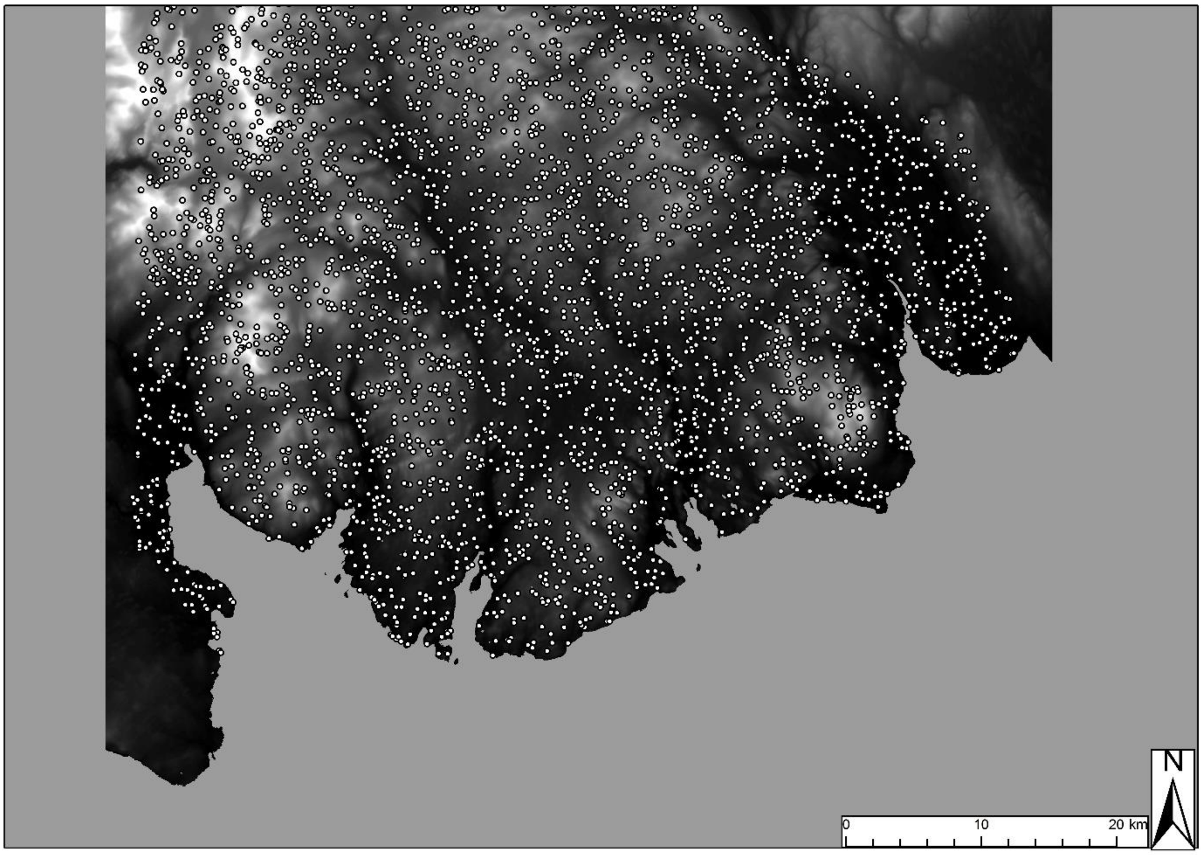
Points used for Kintyre sea cumulative viewshed.



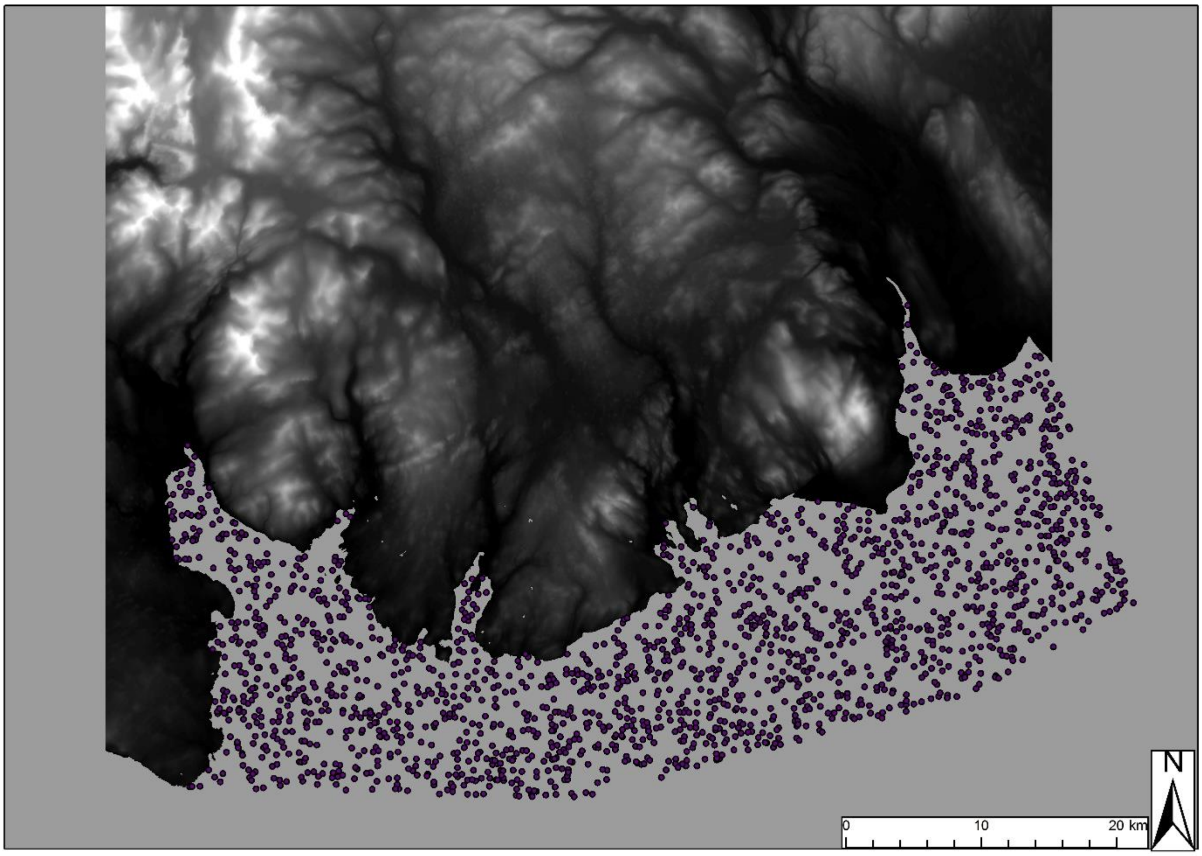
Points used for Skye land cumulative viewshed



Points used for Skye sea cumulative viewshed



Points used for Kirkcudbrightshire land cumulative viewshed



Points used for Kirkcudbrightshire sea cumulative viewshed.

Appendix 3

Work published during PhD.

The forts of Western Scotland: An interim study of internal area.

(in Erskine, G., Jacobsson, P., Miller, P. & Stetkiewicz, S. (eds.) 2016. *Proceedings of the Iron Age Research Student Symposium, Edinburgh, 29th May – 1st June 2014*: 132-141. Oxford: Archaeopress)

Abstract:

How does one define a hillfort in Scotland? For the RCAHMS (1971), the Scottish fort is 'an enclosure, often located on a hilltop, bounded by one or more banks, ditches, ramparts or walls'. Yet such a definition, interpreted strictly, could potentially include a myriad of enclosed settlements, duns and miscellaneous enclosures. What makes a fort a fort? Exploration of this problem, in areas such as Argyll or Galloway, where most forts are small and difficult to classify could potentially contribute to our understanding of the role of hillforts in prehistoric (or early historic) Britain as a whole.

Larger enclosed Iron Age sites in Western Scotland have been little researched, in comparison to smaller distinctively Atlantic sites types such as brochs. The (roughly) 1000 sites defined as fort, dun, broch, settlement or earthwork form a mostly unsorted body of data, yet within these classifications lies the settlement patterns and hierarchies of the 1st millennium BC and much of the 1st millennium AD. This article is an interim attempt to break down the characteristics of sites defined within the fort category by looking at internal area, as part of a PhD project that will explore larger enclosed sites more completely.

Introduction.

Iron Age research in Britain has long been dominated by settlement studies, and in particular by enclosures (e.g. Hawkes 1931; Champion & Collis 1996; Gwilt & Haselgrove 1997; Cunliffe 2005). Within the huge dataset of such sites identified, certain site categories can clearly be observed. Sites like Maiden Castle and Danebury are so different in size to the smallest enclosures, and so contrasting in the scale of their defences to the most lightly defended sites, that it is difficult to argue against the practicality of sub-dividing enclosed sites in Britain into classes such as hillfort, enclosed settlement, homestead or dun. Such categorisation is vital as a cognitive tool for archaeologists, and as a means to communicate our ideas – without it we cannot begin to try to make sense of the archaeological evidence, or apply our data to more over-arching issues of social structures and change in the past.

It is imperative to approach this issue however, in the knowledge that all such categorisation in archaeology is imposed by the archaeologist. Classification, even that which we believe is based on objective criteria, such as building materials or size, is effectively a product of what we, as archaeologists, deem important or relevant about sites or objects (Adams & Adams 1991; Read 2009). The community that built such a monument is unlikely to have been working to any such criteria. It is therefore important to remember that categorisation of enclosed sites should be approached in a flexible way, and that conclusions reached based on the rigid application of such classifications should not be accepted uncritically.

With this in mind, it is difficult to define exactly what a hillfort is - as a class, it is more easily distinguishable in southern Britain compared to the North and West. For Hawkes in the 1930s, "the British hill-fort in these days needs no introduction" (Hawkes 1931: 60), yet if one moves away from Wessex and into Northern Britain, this distinction becomes less certain. Sites defined as 'forts' in much of Scotland are less distinct architecturally and in size from other categories of enclosure, as compared to Southern Britain, a problem recently highlighted by Halliday and Ralston (2009). Enclosed sites in Western Scotland, in particular, are small – the region has been defined by Cunliffe as a 'strongly defended homestead' zone, and places like Argyll and Galloway contain many sites that do not fit easily into conventional categories, such as hillfort (Cunliffe 2005: 74). Research in such areas has focused mostly on small, distinctive sites such as brochs, and larger sites, generally defined as forts, have been, with some exceptions, overlooked (e.g. Armit 1990, 1991, 2003; MacKie 1965, 1991, 2000; Gilmour 2002; Henderson 2007).

This paper intends to look at the internal areas of sites that appear as 'fort' in the RCAHMS Canmore online database in Western Scotland as one of several categories being researched in an ongoing PhD project (the others are landscape position, visibility and scale of defences), in order to begin to understand the characteristics of the under researched fort category. Such approaches have recently been critiqued by Driver as outmoded due to their lack of appreciation of landscape position and complexity of defences, among many reasons, yet he concedes that they are "justified in tackling a considerable body of unsorted data in a 'scientific' processual fashion" (2013: 4-5). It can be argued that we are effectively dealing with such an unsorted dataset in Western Scotland, and that criteria such as internal area offer the most practical way of initially breaking down an unsorted database of enclosed sites on a macro scale.

What do we know?

The term Western Scotland requires some clarification. The region under discussion comprises all land west of a line from Cape Wrath to Fort William, and from there to the mouth of the River Nith (Figure 1). This includes areas conventionally considered part of 'Atlantic Scotland' such as Argyll, Skye and the Outer Hebrides, along with parts of the mainland such as Renfrewshire, Galloway and Ayrshire, and effectively encompasses a varied and little researched dataset. Much of this area has been described as a 'black hole' in terms of existing archaeological knowledge with in 2001 only the Western Isles considered relatively well researched or synthesised (Haselgrove et al 2001). Most archaeological work carried out in this area has focused on distinctively 'Atlantic' sites, particularly brochs, much of the archaeological discourse focusing on the origins and dating of such sites and their role in Iron Age societies (Armit 1991, 2003; Parker Pearson et al 1996; Mackie 1965, 1983). Wigtownshire is perhaps an exception in that it has been subject to a considerable amount of work and research, both intrusive and landscape-based, since Haselgrove et al's report was published (e.g. Cowley & Brophy 2001; Toolis 2003, 2007; Poller 2005; Cavers 2010).

The RCAHMS Canmore online database lists 565 'forts' or 'promontory forts' in Western Scotland. Most of this information was gathered by the Royal Commission in the process of completing their County Inventories (RCAHMS 1912, 1914, 1928, 1971, 1975, 1980, 1982, 1984, 1988), building on the earlier work of David Christison and Frederick Coles (Christison 1898; Coles 1891, 1892, 1893). Indeed, in certain areas fort distributions rely extremely heavily on century-old information. Two of the earliest County Inventories were compiled in Galloway in 1911 and 1912, and few of the sites listed have been further investigated in any detail since then (RCAHMS 1912, 1914), with the notable exception of Solway promontory forts (Toolis 2003). Site categorisation in Galloway, and elsewhere in Western Scotland has since then relied heavily upon the interpretations of a later generation of Royal Commission investigators or Ordnance Survey surveyors, their individual conceptions of what constitutes a 'fort' and the frameworks in which they were working. Individual sites have occasionally been classified as one category and changed multiple times, for varying, often unspecified, reasons.

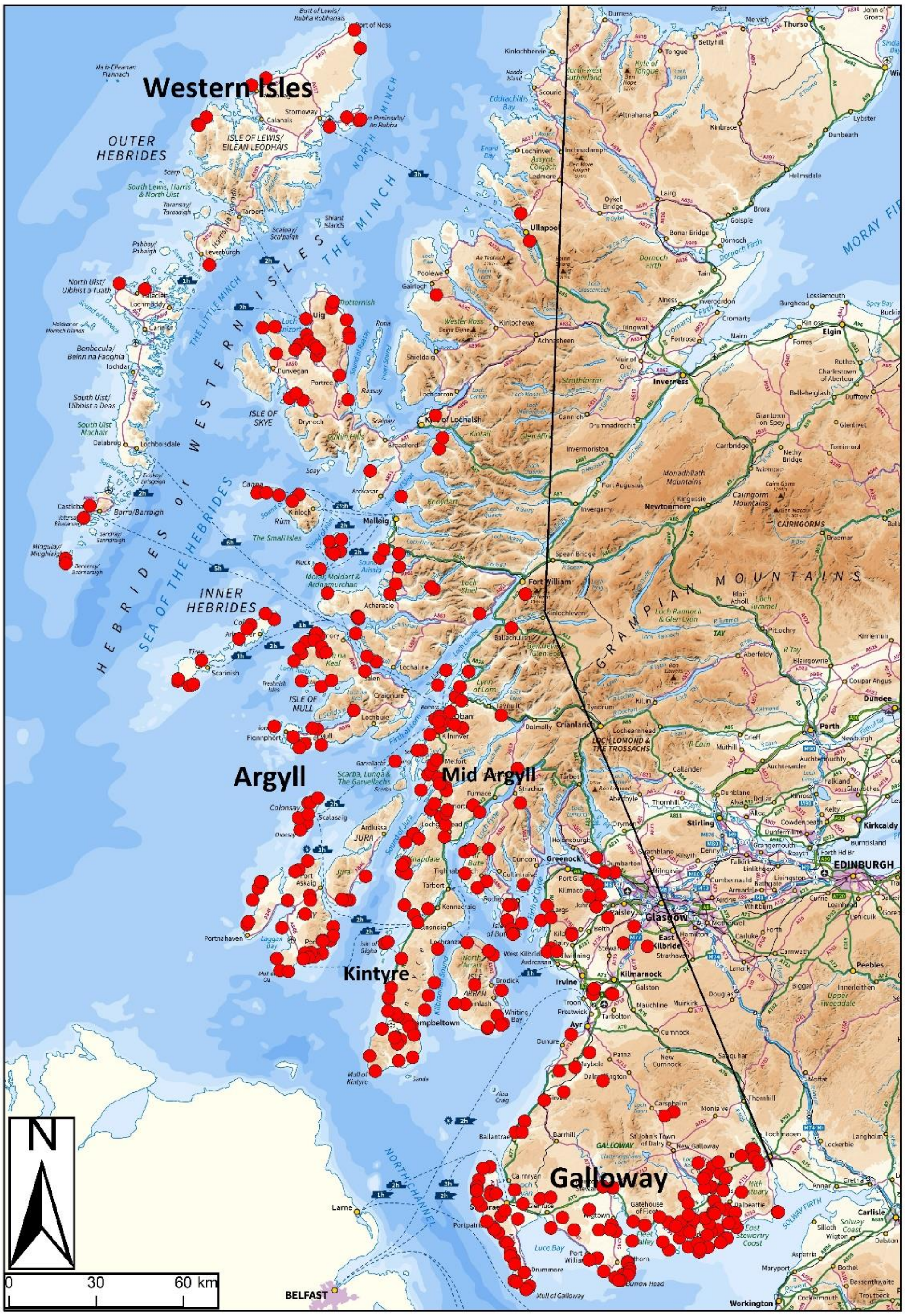


FIGURE 1. *Distribution of sites classed as 'fort' by RCAHMS in Western Scotland. (MiniScale [TIFF geospatial data], Scale 1:1500000, Tile(s): miniscale_relief1_r16, Updated: Jan 2014, Ordnance Survey (GB), Using: EDINA Digimap Ordnance Survey Service, <http://edina.ac.uk/digimap>, Downloaded: March 2014)*

In Argyll, an objective distinction between 'forts' and the smaller 'duns' first appears in the Kintyre Inventory, identifying a 375 m^2 area division between smaller duns and larger forts (RCAHMS 1971; Maxwell 1969: 43). This was an attempt at simplifying the continuum of drystone enclosed sites in Argyll into those sites 'large enough to have served the needs of a small community' with duns 'capable of accommodating only a single family group' (RCAHMS 1971: 16), bringing together an objective, 'scientific' categorisation with social connotations. Along with potential dangers associated with *a priori* assumptions of the role of certain sizes of enclosed site in Iron Age societies, such a rigid categorisation does not deal well with the huge variety of sites that exist within both categories and fall immediately above and below the 375 m^2 division. The RCAHMS' categorisation of enclosed sites in the West has been comprehensively critiqued (Harding 1997, 2004; Alcock and Alcock 1987; Nieke 1984, 1990). Yet while reclassification of smaller sites based on morphology and roofability has been attempted (Harding 1997; 2004), no comprehensive analysis of the larger enclosed sites in the 'fort' category has been forthcoming.

Compounding these problems of site definition is an exceptional lack of reliable chronologies for forts in Western Scotland. Of 565 forts in the RCAHMS Canmore database (canmore.rcahms.gov.uk) only 24 have been excavated in some way (4%) with merely nine subject to some form of absolute dating (<2%). Recent publication of the excavations at Broxmouth in East Lothian (Armit 2014) should remind us of how completely earlier occupation can be removed by later activity – it is probable that the upstanding remains of forts in Argyll and Galloway represent many more phases of activity than are detectable on the surface. Multivallate sites such as Ranachan Hill (Figure 2) and Largiemore in Kintyre may constitute the remains of many different phases of occupation or use. Any attempt to apply data generated by studies such as the examination of internal area discussed below to overarching social models is challenged by the lack of comprehensive dating evidence for forts, while little is known of the function of interiors, with very few large-scale modern excavations of the internally defined area taking place. Ambitious analyses of social organisation are greatly complicated by the possibility that sites may date anywhere between the Bronze Age and the late 1st millennium AD.

Internal area – methodology.

Margaret Nieke (1984: 90-94) attempted to calculate the internal area of forts in Argyll, but these attempts were limited to those sites that the Royal Commission had previously planned – approximately 50% of total forts. The digitisation of Ordnance Survey and RCAHMS plans and mapping allows us to attempt to study internal area more comprehensively across a much larger number of sites.

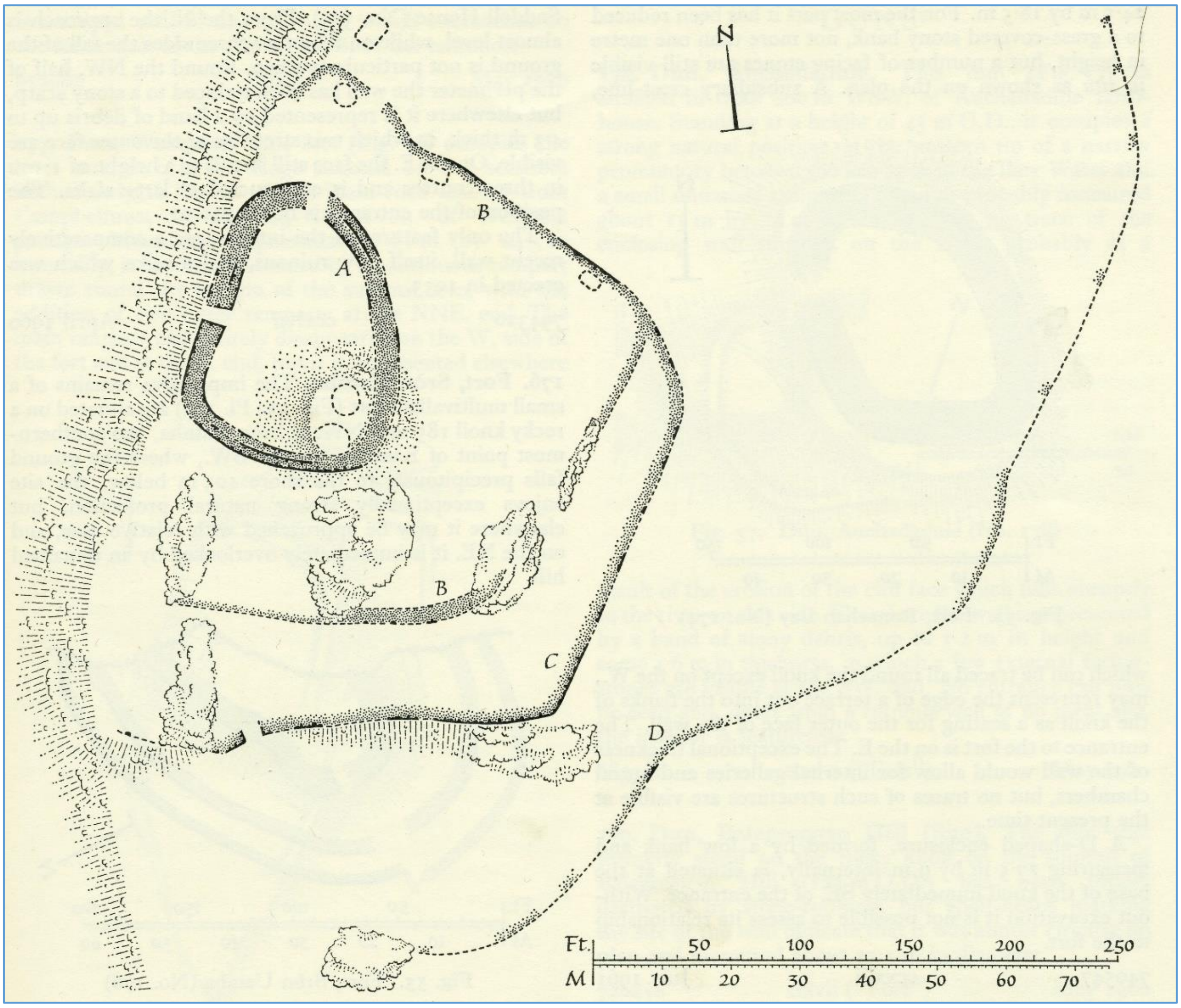


FIGURE 2: *Ranachan Hill, Kintyre. Multivallate and probably multi-period drystone fort. (RCAHMS 1971).*

For the purposes of this study the internal areas of forts were calculated using a combination of methods. Many sites have been planned by the Ordnance Survey at 1:2500 or 1:10,000 and added to scale on digital maps, specifically OS Mastermap, allowing the use of area measuring tools in online services like Edina Digimap Roam to calculate internal area (digimap.edina.ac.uk/roam/os). While the measurements of sites originally planned by the OS at 1:2500 were found to agree with dimensions cited by RCAHMS site investigators and OS surveyors in their site reports (listed on Canmore), forts planned at 1:10,000 were often completely different. In these cases, the general morphology of the site on the 1:10,000 plan was taken to represent an accurate shape, if not size, and the measurements listed by site investigators were applied to that shape, giving an approximate area. With sites that were unplanned by the Ordnance Survey an approximate area was estimated mathematically from available RCAHMS plans, measuring length, width or diameter to obtain the most accurate area possible. If no plans of any kind were available, the dimensions and shape of enclosure listed by OS surveyors or RCAHMS investigators were used to roughly estimate the area of the monument using formulae for the area of a circle, square or triangle – although in these cases the accuracy of the results is likely to be variable. Satellite imagery such as Google Maps combined with a linked tool to calculate area was occasionally used, particularly in the case of sites with a particularly irregular shape, to aid with calculation. Finally, the areas of any sites that were personally visited were calculated accurately using a handheld GPS.

Calculating the internal areas of some multivallate sites was particularly complex. If there was no obvious evidence for multiple phasing, either in available plans or in survey reports of RCAHMS investigators and OS surveyors, the size of the innermost enclosure was used for area calculation. The multiple ramparts of Bennan of Garvilland in Wigtownshire (Figure 3) may represent many phases, but there is not enough visible evidence to support this. The lack of space between inner and outer ramparts suggests that the main area of activity was contained within the inner enclosure. Sites like Ranachan Hill (Figure 2) were treated differently. At Ranachan Hill, the ramparts marked B and C are unlikely to have formed an outer defence for rampart A, as they enclosed a much larger area, and do not appear to respect rampart A in where they were placed. The innermost rampart (A) is much better preserved than B and C and the RCAHMS Inventory suggests that it is much later (RCAHMS 1971). With obviously multiperiod sites like this each separately distinguishable phase was considered as a separate fort and their areas were calculated accordingly.

Of the 565 ‘forts’ listed by the RCAHMS, 122 have been discarded. These discarded sites mainly represent anitiquarian records which have not been substantiated by more modern investigation by the OS or RCAHMS. Of the remaining 443, 50 had insufficient information for internal area to be calculated, leaving a total of 393 for which internal area can be derived from OS and RCAHMS plans, satellite imagery and map depictions.

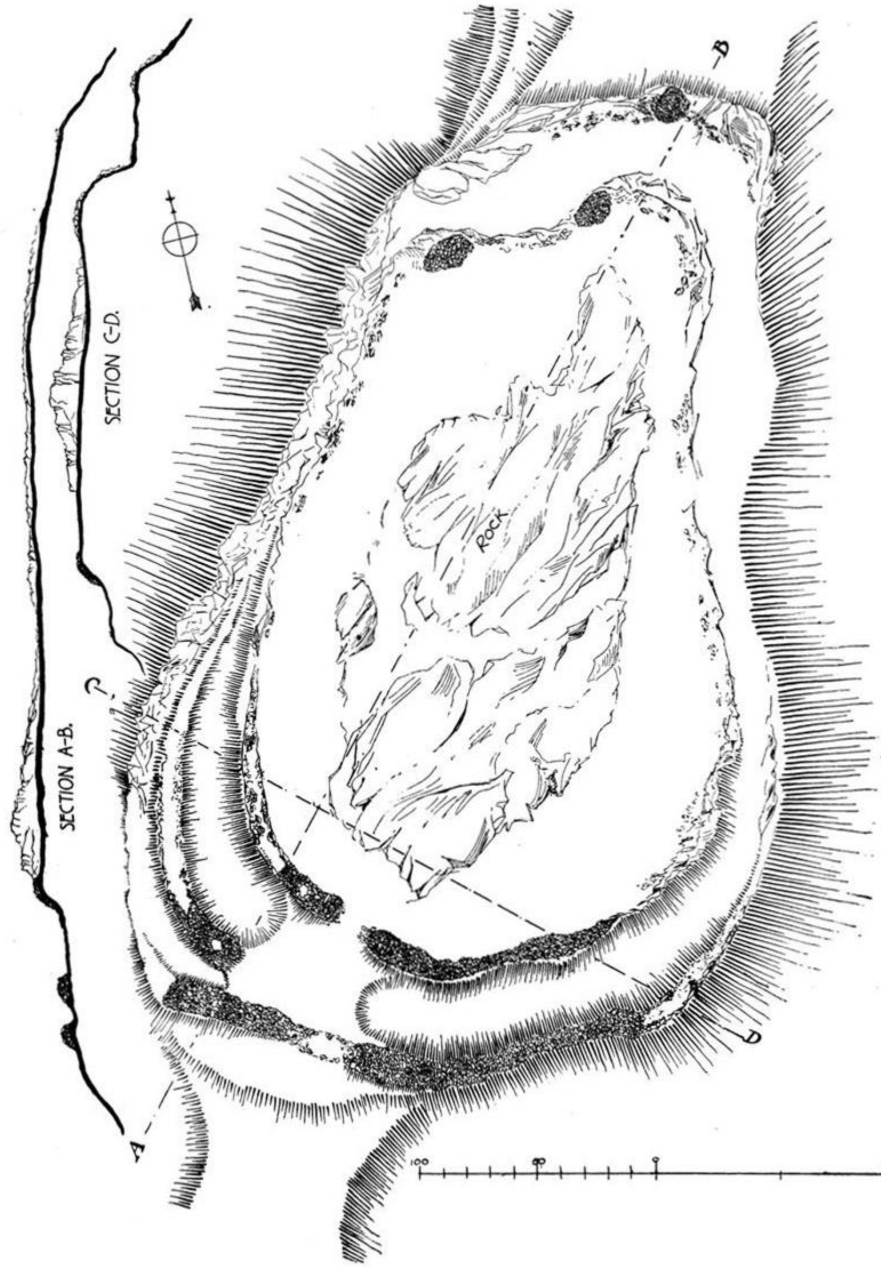


FIGURE 3: *Bennan of Garvilland, Wigtownshire. Multivallate drystone fort. (RCAHMS 1912).*

Internal area - results.

	Argyll	Ayrshire, Renfrewshire etc.	Galloway	North West	Western Isles	Overall (Western Scotland)
A: 0-400 m^2	14	1	8	4	0	27
B: 4-800 m^2	57	7	20	7	2	93
C: 8-1600 m^2	56	10	28	8	1	103
D: 16-3000 m^2	33	7	38	6	1	85
E: 3-6000 m^2	14	8	15	3	3	41
F: 6-10000 m^2	6	2	3	2	2	15
G: 10000 m^2+	11	6	7	0	5	29

FIGURE 4: *The internal area of forts in Western Scotland, listed as the number of sites in each region falling into each size category. Data calculated from RCAHMS/OS plans and mapping, and own fieldwork.*

	Argyll	Ayrshire, Renfrewshire etc.	Galloway	North West	Western Isles	Overall (Western Scotland)
A: 0-400 m^2	7%	2%	7%	13%	0%	7%
B: 4-800 m^2	30%	17%	17%	23%	14%	24%
C: 8-1600 m^2	29%	24%	24%	27%	7%	26%
D: 16-3000 m^2	17%	17%	32%	20%	7%	22%
E: 3-6000 m^2	7%	20%	12%	10%	21%	11%
F: 6-10000 m^2	3%	5%	2%	7%	14%	4%
G: 10000 m^2+	6%	15%	6%	0%	36%	7%

FIGURE 5: *The internal area of forts in Western Scotland, expressed as a percentage of the 393 sites for which internal area could be calculated, divided up by region. Data calculated from RCAHMS/OS plans and mapping, and own fieldwork.*

Figures 4 shows the number of forts in various parts of Western Scotland divided into various categories by area, while Figure 6 displays the data for the study area as a whole in graph form. The area categories, A-G, were determined essentially arbitrarily, with those towards the larger end of the spectrum, i.e. D-G, representing a much larger span of internal areas, reflecting the smaller proportional difference between sites of 6000 m^2 and 6500 m^2, for instance, compared to sites of 500 m^2 and 1000 m^2. Figure 5 shows the comparative internal areas of forts expressed as a percentage of forts in each region.

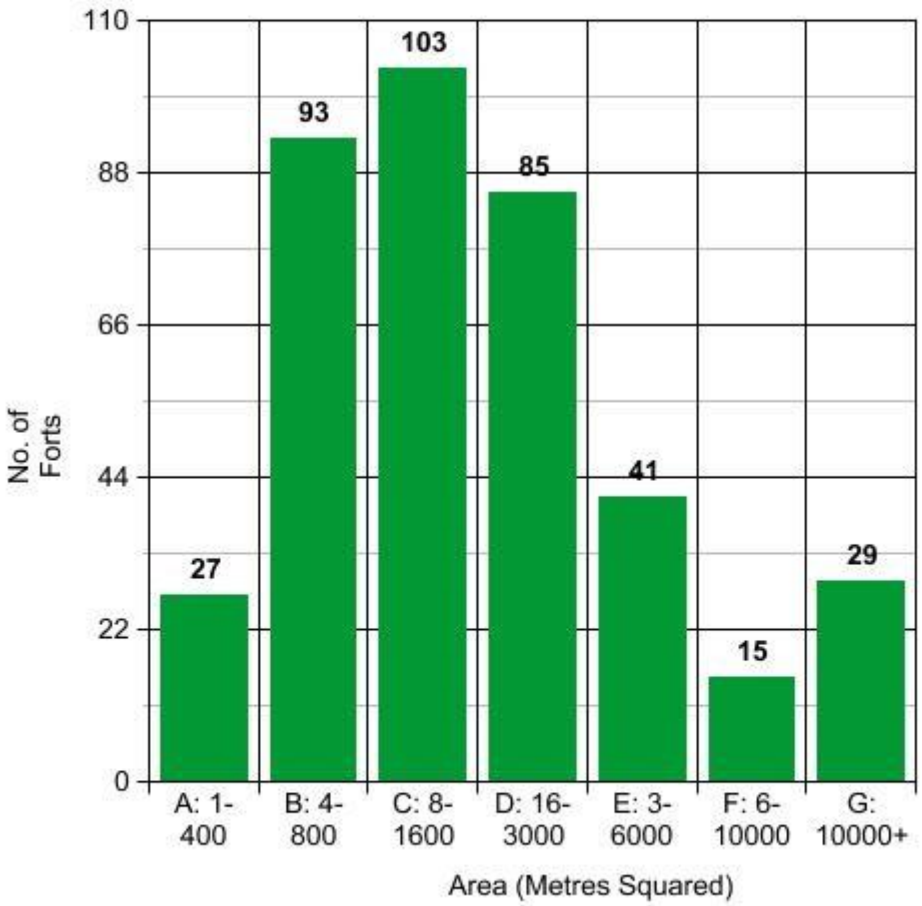


FIGURE 6: *The number of forts falling into each area category in Western Scotland. Data calculated from RCAHMS/OS plans and mapping, and own fieldwork.*

The figures collected show the wide variety of sizes that exist within the 'fort' category, and suggest certain regional patterns. In all regions the great majority of sites are below 3000 m^2, with Argyll forts being particularly small – 66% fitting into categories A–C. Galloway forts tend to be slightly bigger, the majority (56%) falling into the C-D bracket, while those of Renfrewshire, Ayrshire, Dumbartonshire and Arran exhibit a slightly different pattern, with generally larger sites distributed throughout categories C-G. All regions, except the North West (Lochaber, Skye, Wester Ross, western Sutherland), show a distinct number of forts above 1 ha in area, while very few forts fall into category F, or 6000-10,000 m^2 (also see Figure 6). While it may be wrong to suggest that this certainly represents a bipolar distribution, as the G category spans a wider range of areas than others, there does appear to be a distinct class of larger forts throughout much of Western Scotland.

The average area of forts in various parts of Western Scotland is shown in Figure 7. Forts in Argyll, Galloway and the North West are clearly smaller than elsewhere, with the average internal area of promontory forts in the Western Isles exceeding a hectare. While forts in Argyll have an average internal area of 3232 m^2, 84% are below 3000 m^2 in area and 70% below 1600 m^2. In Galloway the average area is 3157 m^2 yet 78% of forts are below 3000 m^2. This shows plainly how small the majority of forts are in Argyll and Galloway, and implies that relatively few larger sites are greatly affecting the average area statistic for both regions, supporting the possible bipolar distribution suggested in Figures 4 and 6, with a distinct group of larger forts apparent in both regions.

	Argyll	**Ayrshire, Renfrewshire etc.**	**Galloway**	**North West**	**Western Isles**	**Overall (Western Scotland)**
Total Area m^2	614140	319813	375725	50520	174111	1538309
Average Area m^2	3232	7800	3157	1800	12437	3894

FIGURE 7: *The total and average area of forts in Western Scotland. Data calculated from RCAHMS/OS plans and mapping, and own fieldwork.*

Internal area does not tell us much on its own about a site - a large interior simply implies that a fort potentially could have fulfilled a wider range of functions for a more sizeable community than a small one, not that it did. Furthermore, some larger forts in Western Scotland make considerable use of natural topography and sheer cliffs to define their enclosures and represent relatively little construction work for their size, suggesting that a smaller community could have constructed them, compared to a similarly sized fort requiring a complete circuit of enclosure. At Creag a' Chapuill in Mid Argyll, for example, a four hectare interior is defended by a massive wall on the North and East, while access on the South and East sides is prevented by cliffs. On Eigg, a pitchstone ridge called An Sgurr is defended by a large drystone wall about 75 m long on one side, creating one of the largest (5.5 ha) and most prominent defensive sites in the West. Likewise, the internal area of many promontory forts on Islay and the Western Isles is considerable, with some over a hectare internally, yet the labour required to enclose them would have been considerably less than that of many smaller inland sites that were completely surrounded by ramparts. Sites that take advantage of their topographical setting in this way may differ greatly in conception from those that are complete enclosures of equivalent size. The former sites allow for possible fortification of extensive areas by small communities, albeit only in specific locations where enclosure is least labour-intensive. These topographically defended forts may then have been constructed to meet the needs, whatever they were, of very small social groups.

Conclusions and future work.

The 'problems of definition' noted by Raftery (2004: 162) and reiterated by Halliday and Ralston in relation to Scottish forts (2009: 457) are particularly relevant in Western Scotland, but in examining characteristics such as internal area on a large scale we can begin to understand enclosed sites more clearly in this area. Patterns in the internal area of forts in the region can be seen, particularly in Argyll and Galloway, where the majority of sites are small, but a number of relatively huge sites exist.

The Royal Commission's 'fort' classification somewhat masks the huge variety of sites that fall within the category, and the potential complexity of their dating and relationships with both the landscape and other sites. Further examination of the characteristics of enclosed sites may enable an alternative classificatory system to be established. Relationships between internal size and site prominence in the landscape may potentially help us to identify forts of importance beyond just the family or local level. Are the many small, heavily defended, prominent sites in Western Scotland fulfilling the same role in society as forts above 1 ha in area, but for a smaller population, or are they something else entirely? Are forts that require only a relatively tiny amount of labour to enclose a large area different again in their potential social roles and functions? The study of the nature and scale of fort defences is complicated by differential survival of remains, as is potential examination of entrance morphology and orientation, but may add another layer of relatable information. Further work at a more local or regional level is required to, as Driver has put it, "examine critically the hillforts… as complex, three-dimensional architectural spaces… [and] also place these static monuments in a dynamic landscape context" (Driver 2013: 1). Examination of sites in their immediate landscape should allow us to progress further towards a more nuanced re-classification of forts and duns, and understand the potential role of various types of enclosed site in prehistoric society.

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Later prehistoric forts of Skye

(in Discovery & Excavation in Scotland 2016)

Dun Skudiburgh

Field Visit

NG 3740 6472 Occupying a position of some strength on a conspicuous rocky knoll, Dun Skudiburgh, a dun sitting on top of a vitrified fort, has perhaps been underrepresented by previous investigators.

At least two different phases are visible in the dun, with considerably poorer quality drystone walling including many smaller stones evident to the W, S and SE. A poor quality wall running parallel to the main dun wall approximately 1 m outside it in the W and S has little structural integrity in itself and is likely to be comparatively recent.

The vitrified fort is more complex than depicted in the RCAHMS plan (1928). Two additional lines of defence were observed on the steep E side, the outer more easily discernible with a clearly visible outer face up to 3 courses high in places. The inner is only identifiable in a few patches up to two courses high. The enclosure identified by RCAHMS in the NW appears more likely to be a bank running parallel to the fort wall. Another rampart leading N away from the N-facing entrance is probably also a later field bank, possibly a continuation of this feature.

An additional area is enclosed by a wall in the W. The OS previously identified this rampart as a probable later wall, but no stratigraphic evidence was noted for this to be the case. It defends a steep but accessible slope into a small plateau surrounded by sheer cliffs falling to the sea.

In total there are 3 apparent lower enclosures that may be contemporary with either the fort or the dun. Vitrified stone was observed on several stones in the inner fort wall. Two rocky beaches, one to the N and one to the S are less than 200 m away from the fort and offer comparatively excellent access to and from the sea.

Dun Gerashader

Field Visit

NG 4892 4527 Described by the RCAHMS (1928) as 'a fort of great strength', Dun Gerashader actually represents the remains of two different forts.

The later fort, as identified and planned by RCAHMS survives as a massive stone wall up to 6 courses high, with an entrance in the E.

A rectangular enclosure noted to the SW by RCAHMS is not an enclosure but the inner and outer face of a rampart with an entrance through it. The facing stones of the entrance likely influenced the previous misidentification of this feature as they superficially represent the shorter E side of a rectangular enclosure. This rampart continues to the E and includes many very large stones. Facing stones of this rampart continue along the W and E sides of the hill to the N and appear to be overlain by the large well-built wall of the later fort. This is almost certainly an earlier fort with an entrance to the S, with this entrance blocked by the surviving wall of the later fort.

The two lines of boulders identified by RCAHMS may be ramparts contemporary with the earlier fort as they appear to contain similarly sized large stones. Alternatively they may represent re-use of the boulders from the earlier fort to add extra lines of defence or create a visually intimidating barrier on the more accessible S side of the knoll.

Dun Liath

Field Visit

NG 3598 7002 This galleried fort is mostly as described by the OS in 1971. A wall at the base of the valley approximately 30 m to the E that Mackie considered an outer defence is undoubtedly a dyke associated with later field systems. Another possible rampart closer to the fort on the E and N sides enclosing a small area with several structures is also probably considerably later than the fort, as noted by the OS. Towards the top of the hill on the S, SW and SE however is a definite outer rampart, visible as a scarp with many facing stones visible.

This second rampart may represent an earlier phase of enclosure on the hill, i.e. an earlier fort, or an outer defence for the galleried fort. On size (1035 m^2 inside the galleried defences) this should be considered a fort rather than a dun.

Dun Neill

Field Visit

NG 2814 4075 Dun Neill is considered by the OS to be a dun overlying a fort. A strong argument can be made for it being just a dun with outworks. There is no obvious stratigraphic relationship between the oval walled dun and the small, ephemeral rampart remaining around the western, seaward side of the promontory. This wall has no obvious defensive function as it encloses an area surrounded on all sides by sheer cliffs, indeed it makes more sense that it was a wall contemporary with the dun preventing people or livestock from falling off the promontory. A flat, circular depression within the outwork on the seaward end may be the remains of a structure.

Dun Taimh

Field Visit

NG 3630 3664 A small fort generally as described by the RCAHMS in 1928. This is essentially an inland promontory fort with ramparts continuing in an arc stretching from the W to S and E. There is arguably some walling continuing along the W flank of the promontory to the NW. Evidence of some structural remains are visible in the interior, besides the 19th century cairn, but it is likely that there has been considerable amounts of later activity on the hilltop.

A possible ditch and causeway lie to the S and SE on the main approach to the site.

Ullinish

Field Visit

NG 3173 3740 The promontory fort at Ullinish appears to be larger and more heavily defended than apparent from the OS report (1971). A considerable rampart stretches along the E side of a large promontory from sheer cliff on the S to a smaller, 2-3 m high, cliff on the N. This northern side has been described by the OS investigator as a place of easy access, making the position weak, however considerable amounts of scree lie at the bottom of this cliff, suggesting that a rampart may have one stretched further to the N than currently visible. The interior measures 4085 m^2 and is mostly flat, making this one of the largest forts on Skye.

Creag Nam Mann

Field Visit

NG 4021 5552 The northern part of the fort at Creag Nam Mann has been quarried away. The remains of several large structures are visible in the flat interior. At least one of these structures overlies the fort rampart, suggesting a later phase of activity on the hilltop.

Dun Cruinn

Field Visit

NG 4108 5185 Dun Cruinn is a multivallate fort overlain by a later dun occupying a rocky knoll on a large promontory stretching out into Loch Snizort Beag.

A large earthen rampart with internal quarry ditch stretches around the base of the steep S and E sides, but is not apparent at the more gently sloping N side. It would make sense that this rampart, facing inland towards possible approach routes, along with the several large boulders arranged on the W side approaching the entrance, was more for display than practical defence. A small bank on the N side could be a continuation of this rampart, but as it lines up with field banks leading away from the fort to W and E it is probably later.

The earthen rampart is overlain by scree from the fort wall at the top of the hill, suggesting that it is not later in date. On the summit, a straight internal bank running E-W, noted by the RCAHMS as contemporary with the fort or dun, may be another later field bank. The adjacent abandoned farming township has impacted the visible remains greatly and complicated interpretations of what could be in itself a complex and interesting site.